

MUNICIPAL JOURNAL

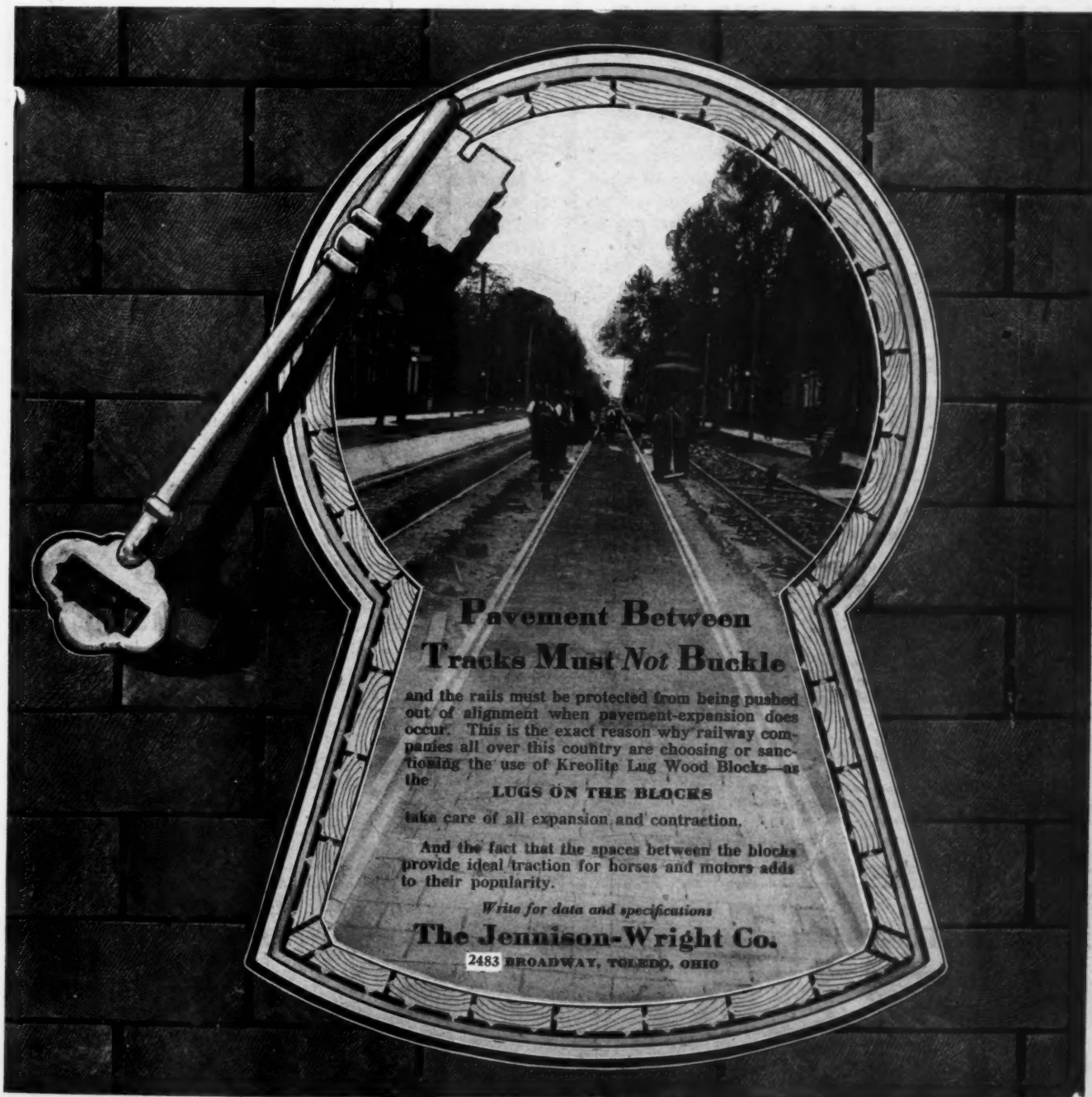
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February 23, 1918

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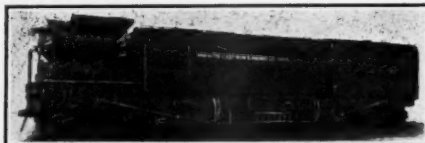
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Municipal Journal

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No. 8

LOS ANGELES WATER DEPARTMENT APPLIANCES

New Methods and Appliances Developed by the Department—Portable Pump and Air Compressor—Back-filling Main and Service Trenches—Cement Joints—Work Done by Department Shops.

By C. W. GEIGER.

The water department of Los Angeles, California, has introduced a number of innovations that may offer suggestions to other cities of the country.

PORTABLE PUMP AND AIR COMPRESSOR.

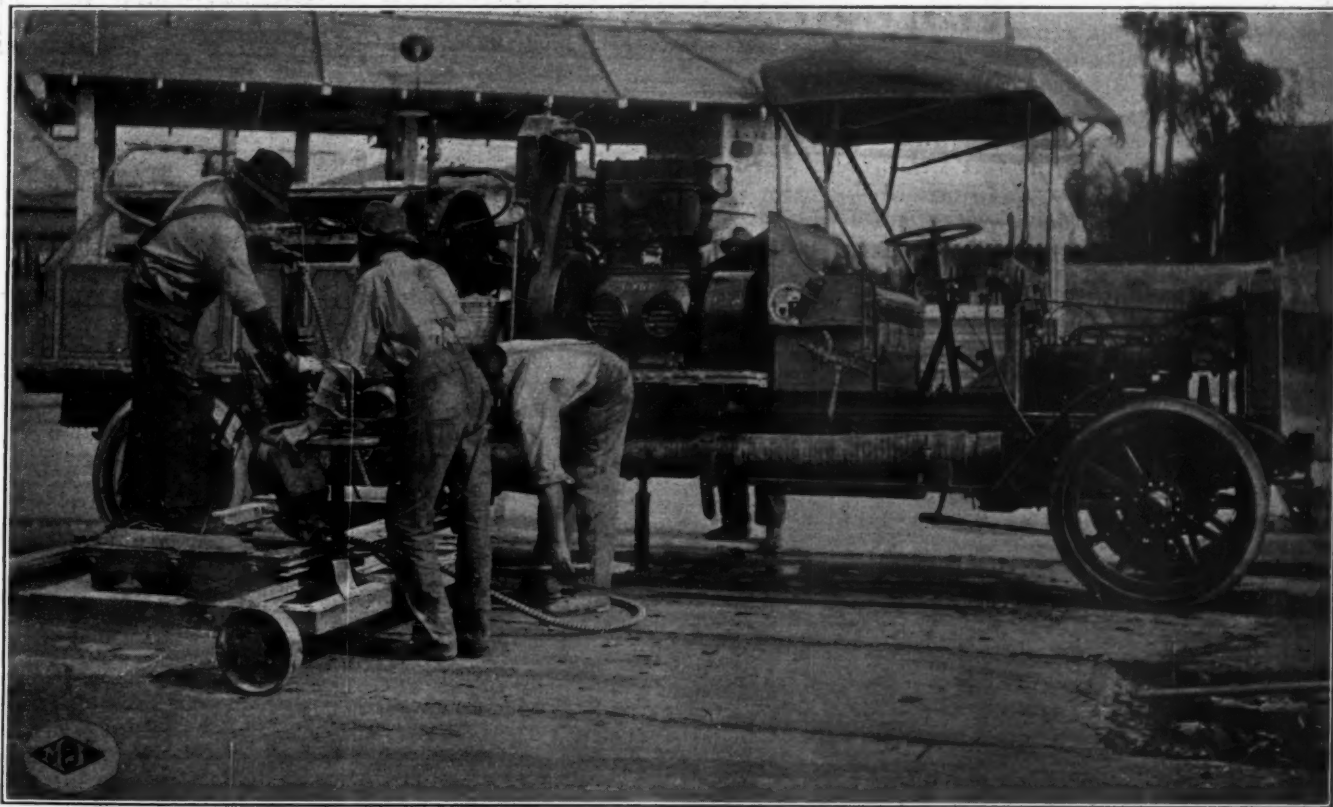
A 2½-ton truck has been equipped with a centrifugal water pump and a powerful air compressor. Special transmission gear has been provided so that either of these can be operated by the 40 h. p. motor that operates the truck. Levers for controlling the transmission are mounted on the right side of the truck, just below the driver's seat. A 52-gallon tank is carried just back of the driver's seat on the left side of the truck, which carries a supply of water that is used to cool the engine when operating the compressor or pump.

The air compressor is cooled by means of the radiator and fan taken from an old automobile. The fan is driven

by a belt running from the fly-wheel of the compressor. A speedometer is connected up with the compressor. The compressed air is stored in a large tank mounted on the rear of the truck. A working pressure of 100 lbs. is maintained in the air tank.

The centrifugal pump is mounted on the left side of the truck and has a capacity of 900 gallons per minute. It is used principally in pumping water when there is a leak or break in a main. This pump recently was used in taking care of the water coming through a 30-inch main while the main was being cut and repaired. The pump is primed by means of a small air pump mounted on the water pump, which is connected with the air tank and can be operated on as low pressure as 7 lbs.

In order to take the vibration from the automobile when the compressor or pump is in operation, a jack has



WATER DEPARTMENT'S COMBINATION POWER TRUCK AND PAVEMENT-CUTTING DRILL CAR.
Shows air compressor, tool box and air tank. The centrifugal pump is just behind the compressor. At the left foreground is the pavement-cutting car equipped with air drill for cutting out pavement.

been attached on each side of the auto frame about half way between the front and rear wheels. The jacks are hinged to the frame and when not in use they swing under the frame, but when they are to be used they are swung down to a vertical position, with their lower end resting on the ground.

Cutting Through Pavement.—The compressed air is used in calking and cutting cast-iron pipe, also for calking and riveting sheet-steel pipe. It is also used in operating an air drill which has just been built by the water department. This drill is used in cutting through asphalt, and breaking up concrete. This has proven to be not only a much more efficient method of doing this work, but is considerably cheaper and easier than the method hitherto employed. An old air-drill that had been used in the construction of the aqueduct has been mounted on a carriage which in turn is mounted on a truck. This entire apparatus can be quickly and easily dismantled and transported by motor truck from place to place. This apparatus is operated along the side of the truck on which the air-compressor is mounted. It is moved forward by means of a ratchet working on one of the wheels. The carriage to which the drill is attached is moved sideways by means of a hand wheel working a rack and pinion. The carriage can be moved sideways so that a strip four feet wide can be worked. It requires three men to operate this device; one on the ratchet to move it forward, one on the hand wheel to move the carriage sideways, and a third to start and stop the drill. A sharp bit is fastened to the drill for cutting through the asphalt. The asphalt is cut through along the two sides of the strip and can then be removed very easily. After the asphalt is removed, the truck retraces the same path, equipped with a square bit, rather heavy on the end. The drill cuts into the concrete for a depth of a half-inch to an inch, the carriage meantime being moved sideways about 6 inches, when the process is repeated. By this means the concrete for about 6 inches is broken up so that it can easily be removed with pick and shovel. The entire truck is then moved forward eight inches and the carriage is moved to the opposite side of the strip.

This device cuts through asphalt and breaks up a strip of concrete four feet wide and 120 feet long in a day. A large tool box is carried on the rear of the truck, in which are carried air-hose, bits, and other tools.

BACKFILLING TRENCHES.

In filling up long stretches of trench, a line of air pipe is laid along the trench and is connected to the air tank on the truck. (There are two of these special trucks in use now.) This air-line has connections for air hose about every 16 feet. An air hose is connected from this

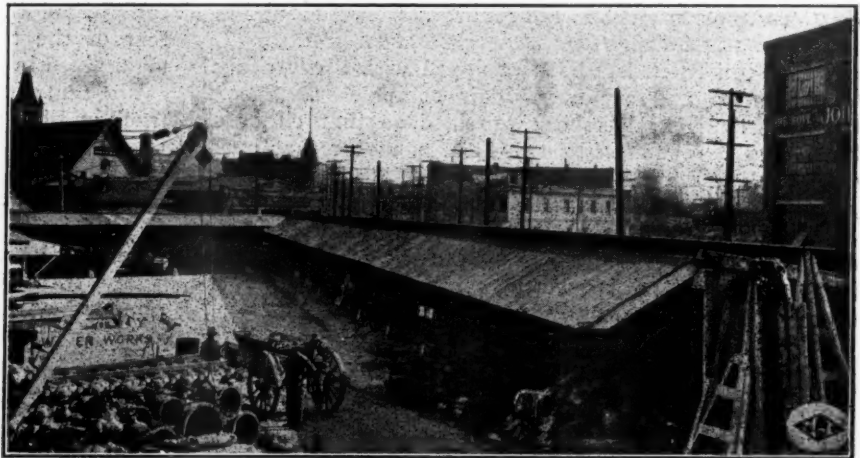


SCRAPER USED FOR FILLING SERVICE EXCAVATION.

line to an old steam hoisting engine that has been remodeled so that it can be operated by compressed air. This remodeled hoist runs parallel with the trench. The hoist is equipped with a drum on which is wound a cable, which in turn is attached to a scraper, the scraper thus being pulled with its load of earth toward the trench. In order to keep the truck which carries the hoist from moving sideways toward the open trench, the wheels of the truck rest against a piece of pipe laid on the street and kept in place by wedges driven into the asphalt. The truck is moved forward by means of a rope and tackle which is attached to the front end of the truck and extends to the rear of the motor truck that carries the air-compressor, the free end of the rope being wrapped around a small drum on the truck.

CEMENT JOINTS.

Cement is used to a great extent for joints of water pipe when the pipe have a solid foundation, but when they rest on ground that is not solid, lead is used for the joints. A joint in 30-inch pipe requires two-fifths of a sack of cement. Two men complete from 18 to 20 of such joints a day. When joints are made with cement, water



PART OF WATER DEPARTMENT YARD.

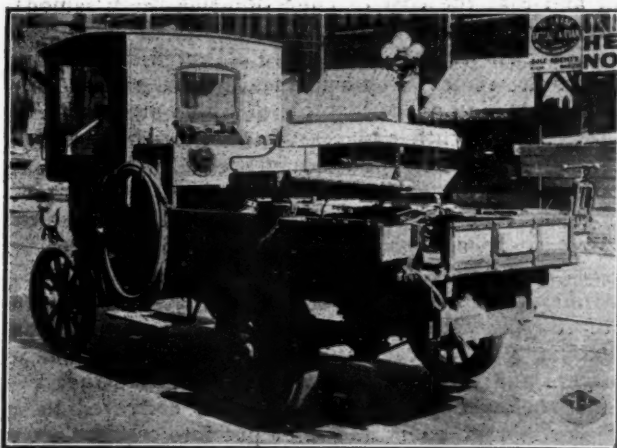
Garage at right and rear. Derrick at extreme left for handling valves and heavy castings.

can be turned into the pipe in 36 hours. In making cement joints, slightly moistened cement is calked in until the cement reaches the bead. Then a strand of yarn is forced in and calked. Next, dry cement mixed with a very small amount of slightly moistened cement is applied and pounded thoroughly, after which cement with more moisture is applied.

PRIVATE FIRE SERVICES

The city installs services for automatic fire-sprinkler systems at cost plus a small monthly charge. This pays for itself in six years, because of the reduction in insurance rates. Many firms are taking advantage of this at present. These services in the down-town section are usually installed on Sunday, because of the congestion of traffic during the week. A crew of five men can install a three-inch service or larger in a day.

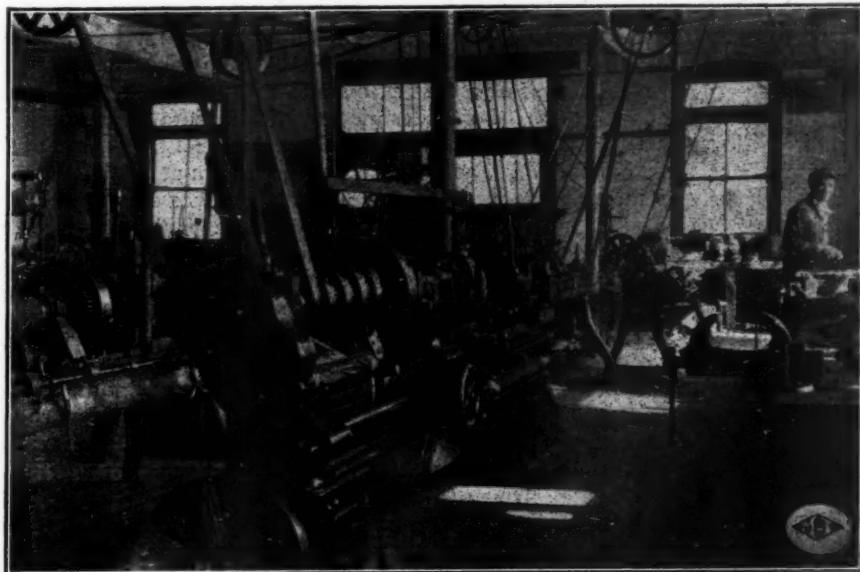
Usually the men are tired after a day's work, and the filling in of a service trench by hand is slow and exhausting. One of the foremen conceived the idea of filling in the trench by means of a scraper made from a side panel of the motor truck used in service. An extra board is bolted onto the panel and it is connected to the front axle of the service truck by means of a cable. The driver runs the truck to the edge of the trench and as he backs up, the scraper, held by two men, scoops the earth into the trench. It has been figured that this system does the work of nine men, and the department has looked so fa-



SPECIAL BODY BUILT BY WATER DEPARTMENT.

vorably upon the idea that they have built a number of scrapers, which are now in use by all service crews.

The general shops of the water department have com-



WATER DEPARTMENT'S MACHINE SHOP, OPERATED BY ELECTRICITY.

plete equipment for doing repair work and building new equipment. The motor trucks were equipped with the compressor and pump here. The apparatus for cutting through asphalt was built here, as well as the hoist. In addition to this, all repairs are made on the 118 automobiles used by the department. The machine shop is equipped with an auto-pit. Extending along the two sides of the lot on which the shops and store-rooms are built is a garage capable of accommodating a large number of motor cars. Gasoline, distillate, and oil are stored here. The entire lot has been paved with asphalt. A large crane in the center of the yard is used in handling all heavy equipment and supplies.

Many of the auto-trucks are equipped with bodies of special design, one of which is worthy of mention. This particular truck is designed so that it is not necessary to carry the long pipes on the outside of the body, but they are carried in one side of the truck. The end-gate is cut off about eight inches from one side of the body, allowing the long pipes to project. A piece of angle iron is bolted to the bed at the point where the end-gate is cut off. An old auto gasoline-tank has been mounted under the back part of the bed for carrying lunches for the workmen, keeping them safe and clean. On the left side, near the back, is a box which carries pipe-joints and Ts.

Just back of the seat and extending across the bed is a special box for carrying jacks, water pump and valves. To the left of this are two special hooks for carrying hose, and under the body of the truck is attached a box which carries special instruments used in the work, keeping them free from jar and breakage.

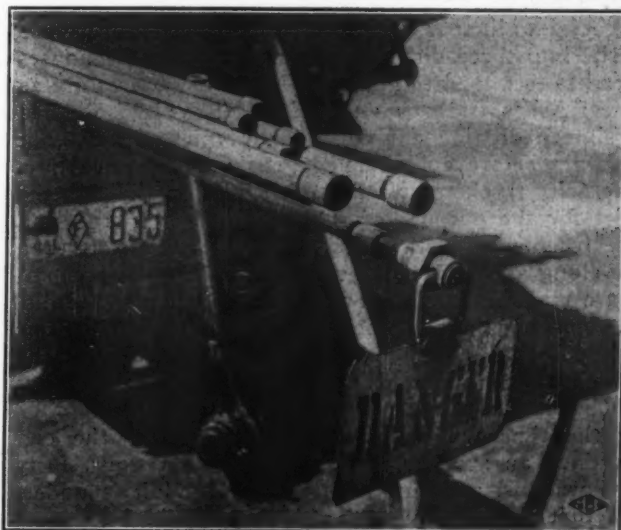
A device for carrying the danger signal has been designed which can be fastened to the end of a pipe of almost any size. The danger sign is attached to a hook, which is fastened into a union. A hole is drilled through the collar of the union and a nail is put through. The union is fastened to a 2-inch nipple which in turn is screwed into a coupling, which coupling is screwed onto the end of one of the pipes on the truck. If all the pipes are less than 2-inch, then a bushing is used in the coupling.

—Buy War Saving Stamps—

USE FOR OLD TRACINGS.

In England and in France there has for some time been urgent need of supplies of linen, muslin and other cloths from which bandages for the army can be prepared, and in this country also the necessity for these is beginning to be felt. "The Surveyor," of London, recently said: "In the offices of engineers and architects there are large numbers of obsolete drawings and tracings, cartoon maps, and diagrams mounted on calico and linen, for which there is no further use. It has been found that the muslin and calico on which these drawings are mounted, and particularly the tracing cloth, are of excellent quality, and when washed, cleaned and sterilized are most suitable for surgical work. The drawings are soaked for 24 hours and the linen stripped from the paper and then boiled and washed. The paper goes to paper makers. It is therefore a matter of great urgency that all such tracings and drawings should be turned to national use."

The idea has also been adopted to a certain extent in this country. A few weeks ago it was announced that the engineers and architects of the northwest had contributed to the Red Cross 2,500 square feet of tracing cloth for conversion into bandages. Any engineers or architects or others having old tracings which are no



DEVICE FOR CARRYING DANGER SIGNALS.

longer needed can render a service by soaking these to remove the matter used in rendering the cloth transparent, and turning the linen over to the Red Cross. Incidentally, many such individuals would be rendering themselves a service by clearing out a lot of old dust-covered tracings whose usefulness is entirely a thing of the past and which only occupy space and interfere with the orderly filing of more important plans.

—Buy War Saving Stamps—

WAR-TIME DISPOSAL OF GARBAGE*

Methods Employed in Buffalo, Cleveland, Columbus, Chicago, Milwaukee, Minneapolis, Detroit and Denver—Operation of Hog Ranch in Denver.

The committee has upon its files an abundance of tabulated data from other cities regarding the methods and the costs of the disposal of garbage and the removal of ashes and household refuse. It is not intended to go into detail at this time with regard to this information, but it is believed that the City Council is entitled to and should be informed in a general way as to the practice in some of the larger cities where the committee has made personal investigations, and the following summary is submitted for consideration:

Buffalo: Garbage and ashes are both collected by the city. The ashes are removed from the premises at a cost of approximately 78 cents a cubic yard, and this class of waste is removed to public dumps, and no revenue is derived therefrom, except of course the filling up of lands in some instances, particularly water front property, necessarily proves to be a means of increasing realty values. Other classes of refuse are hauled to a central distribution plant, where such materials as paper, rags, tin cans, metal, junk, et cetera, are sold at prices which under present conditions offset the cost of taking care of this class of refuse. The garbage is collected by the city at a cost of about \$2 per cubic yard, and is delivered to a private corporation, to which an extra charge of \$1 per ton is paid by the city. The garbage is then disposed of by the reduction process. The garbage is dumped into a pit, passed into conveyors, which carry the same into revolving dryers, where it is treated by heat so that the greater part of the moisture in the garbage is carried off. It then passes in a conveyor to percolating tanks, where it is treated with gasoline, where the grease is extracted and treated for commercial purposes. The garbage is then transmitted to a dryer, pressed, ground, and mixed with animal tankage, where it becomes a commercial fertilizer.

The city ordinances require the separation of refuse material into three different classes, and this the householder has to attend to himself. The three classes are as follows: Ashes, Garbage, and Refuse. The city is divided into sixteen districts for collection purposes, and about two hours before collection wagons are to arrive in a district, city truckers or rollers, so-called, go through the district for the purpose of rolling all ash, garbage, and refuse receptacles to the curb. Wagons and lifters then come along and collect the same, and after the receptacles are emptied truckers or rollers again cover the district, replacing the receptacles in the yard. This is done in every district of the city except in the business or the so-called night district, where the occupants of premises are obliged to have receptacles placed on the curb.

At the time the committee visited Buffalo the city maintained an average of thirty garbage wagons, forty refuse wagons, and forty ash wagons, and it is understood that the equipment has been motorized to some

extent and that the cost of collection has been reduced considerably by reason of that fact.

Cleveland: Ashes and garbage are collected by the city. The ashes are removed by a district system, and are removed to dumping grounds, most of which are upon the lake front, and in other places where the city owns the land. The garbage is collected in specially constructed wagons, hauled to a collecting station, and there transported to a reduction plant, which is on the outskirts of the city. There, a large concrete pit, capable of holding from 250 to 300 tons of garbage, is the unloading point, from which the garbage is conveyed to tanks or digestors and thoroughly cooked. It is next pressed until it has approximately 45 per cent of moisture. It then goes into the dryers and the moisture content is still further reduced to below 5 per cent. It is then conveyed to a percolator storage room and later put into a percolator, and the grease is extracted. The grease is put into a solvent at this point, dumped into a treating tank, and the solvent is evaporated and condensed in order to recover the same. After the grease has been extracted from the solid matter, the latter is thoroughly screened, and the tankage milled and mixed with garbage stick, and again dried and conveyed to the storehouse where it is held until disposed of to private parties for use as a fertilizer. In Cleveland some 70,000 tons of garbage are treated a year at a cost of over \$2 a ton.

Columbus, Ohio: A description of and data concerning the Columbus plant was submitted in the 1916 report of the committee. By reason of the data then at hand it was generally understood and the impression was conveyed by the data that the Columbus plant was a paying proposition. Your committee learned, however, during its personal inspection of the plant and by reason of questioning of the officials in charge, that although this reduction plant is one of the best and most economically conducted in the country, the apparent revenue therefrom is entirely eliminated when the items of depreciation and interest are taken into account. Even this situation relates simply to the disposal of the garbage after it is delivered at the plant. The collection of the garbage is a separate expense, and a direct charge against the city.

Chicago: Last year some of your committee inspected the Chicago garbage plant and found that the equipment which had been utilized for a number of years past was being discarded, and a new plant was being constructed. At that time it appeared that it would be a question of a few months only before it would be in full operation. Upon the recent inspection trip made by your committee it was found that a very small part of the new plant was being operated. Much of the machinery and considerable equipment that is to be utilized in the new plant was set up and ready for use, but the essential parts could not be obtained for the reason that the present war conditions make it impossible to have the manufacturers turn out the equipment. The construction engineer informed the members of your committee that within three weeks' time he could put the plant in motion if he could get the necessary equipment, but he was at a loss as to how soon this hope could be realized. The new Chicago plant is to consist mainly of vaporizers and percolators of a capacity of ten tons each, and a new type of Atlas dryer, by which indirect heat is to be utilized. The equipment is a very expensive one, although it is the opinion of the operating engineer that the maintenance cost over the old equipment is going to be reduced very materially.

Milwaukee: The municipality owns and operates an incinerator and collects garbage, ashes, and rubbish. In part of the city the garbage, ashes, and rubbish are collected as one unit, and burned as such. This is estimated

*Concluded from page 110.

to make a mixture of about 25 per cent ashes, 7 per cent rubbish and about 60 per cent of garbage. In the other sections of the city, the garbage and rubbish are collected separately and only the garbage is conveyed to the incinerator, the ashes being carried to the city dumps on the lake front. The ash situation is one which emphasized to the members of the committee the fact that it is not feasible or advisable for the collection of this class of rubbish from the buildings direct. In Milwaukee the teamsters enter the premises, removing barrels, but in most cases shoveling up the ashes and rubbish from cellar floors in baskets and carrying them out to the wagons. This means an expensive operation, as the city hires the outfits, requiring that each collector bring in two full loads each day. The cost of collecting ashes and rubbish, based on a cost of 65 cents a cubic yard, is over \$200,000 a year, or 54.15 cents per capita. The collection of garbage is on the basis of about \$3.07 per ton or a total cost of about \$117,000, which means about 29.32 cents per capita.

Minneapolis: Like Milwaukee, Minneapolis operates an incinerating plant, but it is interesting in connection with the changed opinions of the members of your committee to note that the officials of that city, having been convinced of the extreme cost under the present conditions of operating the incinerator, have also set aside plans for a new reduction plant for the purpose of investigating thoroughly and with prospect of establishing a municipal piggery. The fact that the Minneapolis incinerator has had the reputation of being one of the most efficient plants of that kind in the country and that the demand for fats and fat products has prompted the officials of that city to arrange for the discontinuance of that plant, with the purpose of having the garbage fed to swine, makes a potent factor in giving serious consideration to a more general application of this form of garbage disposal. At St. Paul, Minnesota, close by Minneapolis, they are also at the present time having their garbage disposed of through the agency of a private corporation operating a piggery.

Detroit: The city hires the collection outfit for removing from private estates. The city does not collect from hotels, business blocks, manufactories, or large apartment houses, and does not enter the building. The ashes and rubbish are carted to a city dump and the privilege of picking out the salable articles nets the city a revenue of a thousand dollars a year. It costs the city from \$2.07 to \$5.68 per load to collect this material. Last year over \$500,000 was expended for collection, and about \$25,000 for leveling off at the dump. The garbage the city collects and delivers to a private contractor at the water front. The city in addition to bearing the cost of collection bears one-half of the freight charge for the transportation of the garbage to a reduction plant some twenty miles from the city. The total appropriation for 1917 for this was \$216,000.

Denver: Denver, with a population about the same as Providence, handles the garbage situation by means of a contract between the city and a hog ranch corporation which has been in force for ten years, for a consideration, namely, one dollar per annum. The Denver hog ranch is given the privilege of hauling away the city's food refuse. The equipment consists of about 35 steel tank wagons of about 76 gallons capacity. Daily collections are made in the business district and twice a week in the residential districts in winter and every other day in the summer. The city ordinances require each householder to provide a covered garbage receptacle, and garbage collectors who find anything but garbage in receptacles immediately report such circumstance and the matter is dealt with by the city authorities, and in certain

cases where it is repeated the resident is compelled to dispose of his own garbage.

The hog ranch is located on the outskirts of the city and consists of stables, a farrowing shed, breeding pens, fattening pens, and self-feeding devices. On the average there are about 5,000 hogs in the equipment. The farrowing shed with 500 pens is the center of the system. Each of these pens and the small outdoor outlet is floored with two-inch planks in order to promote cleanliness. The alleyways on either side of the shed separate the farrowing pens from the fattening yards, and a still further yard system is utilized for placing sows with their weanling pigs. The young pigs have garbage fed to them just as soon as they will eat, and this continues to be the basis of their diet until they reach the market size. For a while after reaching the weaning yards, alfalfa is added to the diet, and when weaned the pigs are immunized for life from hog cholera. Under State supervision extreme care is taken to eliminate the element of cholera, and everything is done to promote cleanliness and to ensure the healthy condition of the product. Special feeding devices are used and self-feeding cans are utilized. The main essential is the feeding of fresh garbage, and that is the endeavor which evidently results in the successful operation of this Denver farm.

The plant itself is estimated to represent an investment of about \$35,000, and it is also estimated that the cost of the maintenance of the plant is about \$25,000 a year.

—Buy War Saving Stamps—

FEEDING GARBAGE TO HOGS

Discussion, at Conference on This Subject Called by United States Food Administration, by Federal Officials, Meat Packers and Others.

On December 7, 1917, the U. S. Food Administration called a meeting which was held in Chicago to obtain data in regard to the feeding of garbage to hogs. The meeting was presided over by Mr. I. S. Osborn, at that time with the Food Administration. Among those present at the meeting were Dr. Lester H. Howard, Commissioner of Animal Industry, and Dr. Edw. A. Cahill, Dr. O. B. Hess and Prof. W. J. Carmichael of that Bureau; George H. Shaw, F. G. Ashbrook and Dr. B. W. Murphy of the U. S. Department of Agriculture; Dr. Geo. M. Rommel, chief of the Animal Husbandry Division, and F. C. Bamman, of the U. S. Food Administration. Among those not connected with Federal departments were college professors, representatives of the packing industry and others interested. To one of these, Dr. Charles V. Chapin, health officer of Providence, R. I., we are indebted for the following information.

Before opening the discussion proper, Mr. Osborn called attention to what was being accomplished in the way of conservation by the reduction process. He said that twenty-nine cities with a total population of 17,000,000 are reducing annually 1,200,000 tons of garbage from which is obtained 70,000,000 pounds of grease and 175,000 tons of fertilizer tankage. Various subjects were discussed as follows:

Methods of Separation and Collection.—It was admitted that a good deal of extraneous material, which is injurious for feeding, is frequently put into garbage, and that much can be done by education to improve this condition, particularly if city officials are earnest in their efforts. Peter B. Gibson of St. Louis was particularly insistent on the good which could be accomplished by education. The wrapping of garbage in paper was condemned if garbage is to be used for feeding. Frequent collection in the summer is desirable in order to have fresh garbage, but once or twice a week in the winter is frequent enough

from the feeders' standpoint. The distribution of garbage in large cities to a number of farmers was considered in many cases desirable but difficult to accomplish for sanitary and other reasons. Municipal collection is best, or, in place of that, a single responsible contractor. Districting a city among farmers is bad.

Garbage Feeding and Health.—Very little was said on this subject except by Dr. Chapin, who strongly urged that garbage disposal is a question of economics and comfort and scarcely affecting health at all. As regards the quality of the pork, he has never been able to find any evidence that it is unwholesome or carries disease. He has frequently eaten it himself and considers it as good as any pork. No one present said anything against the wholesomeness of garbage-fed pork.

Value of Garbage as Food.—Very few definite statements were made. Thomas Horne, superintendent of the Worcester farm, said that it cost him \$2.30 per ton to dispose of garbage by feeding and that each ton of garbage yielded \$7.96 cents worth of pork, leaving a net value of \$5.66. Select garbage, like hotel garbage, is very much more valuable. In Worcester Mr. Horne does not get the best garbage. Mr. Gaumitz said that twenty-five pounds of hotel garbage will make a pound of pork, making the garbage worth about \$12.80 a ton. Prof. John M. Evvard found that twenty-five pounds of cafeteria garbage would produce one pound of pork. Most of the speakers were agreed that, in practice, cities could not usually expect that the cost of collection could be entirely defrayed by the profits of garbage feeding, though that has sometimes been accomplished.

Market Quality of the Pork.—There was lengthy and somewhat technical discussion of this subject and as far as could be determined, by one who is not an expert, it was agreed that garbage-fed hogs, on account of their large bellies, shrink more in dressing than grain-fed animals, and hence on live weight bring a little less. Prof. Evvard said that he had had experts rate garbage-fed pork in comparison with other pork (the identity of the pork being unknown) and that the garbage-fed pork was firmer and stood higher. It was suggested that some instances of poor quality of garbage-fed pork were the result of feeding cooked garbage to animals closely confined.

Character of Feeding Plant.—There was a good deal of earnest discussion of this subject but the speakers were not always in accord. Some advocated a wide range, particularly with the larger animals, while others believed that they could be handled best in small groups, in small enclosures and with small shelters. Good shelters generally were recommended, some advising small houses and some large ones. The breeding sows should be in well lighted and heated houses. A sandy soil with good drainage is desirable. If hogs have a considerable range, they should have shade. Some advocated a place to wallow, others did not.

Methods of Feeding.—All agreed that nothing is to be gained by cooking the garbage, but on the other hand it is harmful to do this, as the animals do not do so well. Some thought it pays to use enough heat to melt the garbage in the winter, but not to cook it, though others did not think this necessary.

Most of the speakers believed that hogs do better on garbage if bred from garbage-fed animals. There was a good deal of difference of opinion as to whether animals should be fed on garbage exclusively, and it was agreed that more accurate data are needed.

Some strongly urged letting the animals feed from wooden or cement platforms. Others feed in troughs, and some are much in favor of troughs on skids which can be moved from place to place. Charles H. Knight of

Louisville raises hogs on a large dumping ground to which all of the mixed garbage of the city is hauled. He claimed that the hogs do very well indeed.

Breeds of Animals.—There was general agreement that much attention should be given to the breeding of the animals. There were no reports of using pure bred hogs for utilizing garbage, but it was agreed that high-grade animals should be used. Mixtures of Yorkshires, Jerseys, Durocks, and especially Tamworths were recommended. Attention to breeding is considered one of the most important elements of success.

Diseases of Garbage-Fed Hogs.—Although tuberculosis has been alleged to be a serious menace to garbage-fed hogs, facts were presented to show that this is not so, and that tuberculosis is less common in garbage-fed animals than in animals which feed on skimmed milk, or which follow cattle. Mr. Horne said that of 100,000 pounds of pork only fifty-one pounds had been condemned for tuberculosis. On the other hand the incidence of this disease is very high in many western animals. Figures were also presented to show that there was no excess of trichinosis in garbage-fed animals.

The greatest menace to hog raising at the present time is hog cholera. There was a great deal of technical discussion as to the nature and mode of this infection, and also as to the best methods of vaccinating against the disease. All were agreed, however, that it is entirely possible, at a moderate cost, to successfully vaccinate a herd against hog cholera so that the losses are of little moment. It was admitted that much of the vaccinating is done in a slipshod manner and is not successful. More careful Federal and State control was urged.

The general feeling of the conference seemed to be that garbage feeding is a desirable and economical means of garbage disposal. There are a large number of cities of small and moderate size where this method of disposal can be undertaken immediately. Many large cities now employing other methods may find it desirable to make a change. The profit from garbage feeding can be much increased when more is learned about the best methods of feeding, of selecting hogs, and of housing them. Much of the success in hog feeding depends upon the ability and expert knowledge of the man in charge.

—Buy War Saving Stamps—

HOG FEEDING IN WORCESTER

Arrangements at the Municipal Piggery, Where Two Thousand or More Pigs Are Kept—Pigs Clear Scrub Vegetation from Lots.

Worcester, Mass., is one of the few cities of the country which operates a municipal piggery, although the number of such promises to increase rapidly this spring. The population is about 175,000, and about 70 per cent of the garbage from the city, amounting to between 20 and 30 tons per day, is fed to pigs, which number between 2,000 and 3,000. These pigs are kept on a farm of 376 acres that is owned by the city. Garbage is collected twice a week. The haul to the farm is between ten and eighteen miles and each team generally makes only one load a day. Fish refuse and rotten eggs from markets and commission houses are not mixed with the other garbage, but are required to be placed in separate cans with tightly fitting covers, and are buried.

The garbage is fed to the pigs just as received. Washing is believed to be uneconomical because it removes considerable food material, and also to be of no advantage; and cooking or steaming makes the garbage more acid and interferes with the rejection by the pigs of substances in the garbage which are harmful to them,

and which they can reject more readily than any man or machine culling could do.

The pens are cleaned out daily and the cleanings placed in a compost which is enclosed by concrete walls. These cleanings may become a nuisance by their odor, unless great care be used. After experimenting with this material, the municipal commission in charge of the pig-gery found that if composted in layers with an equal volume of dry top soil there was practically no offensive odor, only a musty smell remaining after ten days. As the cleanings are quite wet, it is necessary to spread them in thin layers and cover with dry soil. This composted material gives off no objectionable odor when used as fertilizer, but if uncomposted it might be the cause of considerable nuisance. In addition, it is believed that composting retains a considerable amount of valuable nitrogenous matters which would otherwise escape.

When the pigs are about six months old, they are turned into hog lots, in which are placed outdoor feeding platforms about 8 by 8 feet made of two-inch planks and mounted on skids, with half-round timber on two sides to prevent the garbage being pushed off the platform. Several of these sections are placed end to end to form one large platform. The platforms are shoveled off clean each day and the material so removed is buried or composted. When the ground around a platform has become foul with the garbage liquor and scattered garbage, the sections are skidded to another location and the ground where they previously were is plowed up. By this means the refuse trampled into the ground does not produce foul odors. About three acres of hog lot is allowed to each one hundred pigs. They are kept in these lots for about fifteen months and then are sold.

The pigs in the lots are utilized for cleaning off scrub vegetation and improving the land. They chew the bark from practically all deciduous trees, thus killing them, but coniferous trees are not touched. After removing the bark above ground, they uncover the roots and gnaw these, and even root up the smaller stumps. In about two seasons they remove all of the scrub from a lot, leaving only the larger stumps to be pulled out to make plowing possible. Most of the city's farm has been cleared in this way and made into productive farm property. In addition, it is claimed by pig growers that the scrub-bark is beneficial to the health of the pigs.

The number of pigs kept varies from time to time. When the quantity of refuse becomes less, enough pigs are sold to reduce the number to that which can be fed properly, and when the quantity of garbage increases, pigs are added to the herd. One ton of garbage will feed from one hundred to one hundred and fifty pigs, depending upon their size. About two thousand pigs are kept on the farm in winter and about three thousand to five thousand in summer.

—Buy War Saving Stamps—

TRADE WASTES IN SEWERS.

Philadelphia is planning the largest sewage treatment plant in America and, in view of the large amount of manufacturing in the city, is naturally giving the most careful consideration to the matter of the admission of trade wastes to the sewers. Concerning this, Chester E. Albright, chief engineer of the Department of Public Works, gave the following discussion in his annual report:

"It is recognized without discussion that any trade waste which will injure the structure of a sewer or interfere with the flow of sewage therein must not be admitted. Legislation already exists for the latter purpose.

"But in the cases where admission of trade wastes to the sewers increases the cost of operation of the sewage treatment works it is doubtful whether it is advisable to hamper industry by requiring treatment of the wastes at

private cost within the factory in order to reduce the character of the waste to the equivalent of domestic sewage.

"While this is the procedure in many cities in England, it has a tendency to stifle industry, which thereby retards municipal growth.

"In most cases where trade wastes not harmful to sewers are produced, the deleterious effect upon a large municipal sewage treatment works can be minimized at small private expense by the installation in the factory of tanks so designed as to permit a steady, nearly uniform discharge of the trade waste into the sewer throughout the entire 24 hours of the day, instead of the discharge of large quantities in a short period of time.

"By the former method the trade waste is mingled with the sewage in such a manner as to lose its identity by the time it reaches the treatment works."

—Buy War Saving Stamps—

SERVICE STRENGTH OF SEWER PIPE

Pressures Exerted upon Pipe in Trenches by Back-filling, and Strength of Pipe to Resist Them— Conclusion from Practical Experiments.

A theory of the pressure exerted upon sewer pipes in trenches, developed from an investigation conducted by the Engineering Experiment Station of Iowa State College, and specifications of the American Society for Testing Materials based upon it, were described in the issue of Municipal Journal for October 15th, 1914. A few weeks ago the experiment station published a bulletin giving the results of research in the subject since that time. This bulletin reviews the work previously done and the former bulletin on the subject. The new matter consists chiefly of figures (derived from experiments) for coefficients in the formula, and for the actual cracking loads resisted by sewer pipes in practice. Also of recommendations concerning the testing of pipe.

The contents of the bulletin are summarized as follows:

There is urgent need at the present time for the development of a rational system of design of pipe sewers as to supporting strength, whereby sewerage engineers may be enabled to provide intelligently and adequately against danger of the cracking of sewer pipe in ditches under the loads due to or transmitted through the ditch-filling materials.

The development of a rational theory for the design of pipe sewers as to supporting strength requires the solution of three separate problems as follows:

A. The problem of developing the theory of loads on pipes in ditches, whereby loads due to ditch-filling which sewer pipe must be strong enough to carry without cracking in actual ditches may be determined in advance.

B. The problem of developing the theory of the supporting strengths of sewer pipe in actual ditches, to determine what loads due to or transmitted through ditch-filling sewer pipes can carry without cracking in actual ditches with different pipe-laying methods.

C. The problem of devising standard methods for testing the supporting strength of sewer pipe, whereby the "ordinary supporting strength," which is developed in actual ditches with the "ordinary" pipe-laying method, may be determined in advance by standard tests of sample pipe.

THEORY OF LOADS ON PIPES IN DITCHES.

The problem of developing the theory of loads on pipes in ditches has already been solved, and the solution has been published since 1913, in Bulletins No. 31 and No. 36 of the Iowa Engineering Station at Ames, Iowa. A table of safe probable maximum loads from ditch-filling materials has been adopted by the American Society for Testing Materials since 1914, in its Standard Specifications for Drain Tile.

A correct and simple formula for computing the load on pipes in ditches due to ditch-filling materials is

$$W = CwB^2,$$

where

W = load on pipe in ditch, in pounds per linear foot.

C = coefficient of loads on pipes in ditches.

w = weight of ditch filling material, in pounds per cubic foot.

B = breadth of ditch a little below top of pipe, in feet.

From the diagram given herewith can be obtained the coefficient needed to use in the formula to calculate safe probable maximum loads for all conditions and dimensions of ditch commonly encountered. (According to this theory the total load on the pipe is independent of the size of the pipe and also of the width of trench above the top of the pipe, but depends entirely upon the width

of trench just below the top of the pipe. This is borne out by experience. For example, in one experiment two pipes of different diameters were tried successively in the same ditch, and were found to be subjected to the same load. Sewer pipe have been found cracked in the wide portions and sound in the narrow portions of the same ditch. Pipe from the same factory have been found to crack in wide ditches and remain sound in narrow ditches in the same drainage districts.)

Table II gives safe values for the probable maximum loads on pipes in ditches, due to ditch-filling materials, which are likely to occur under all conditions frequently encountered in pipe sewer construction.

The supporting strengths of sewer pipe must be enough greater than the loads to be carried to provide an adequate factor of safety to prevent cracking. Table III

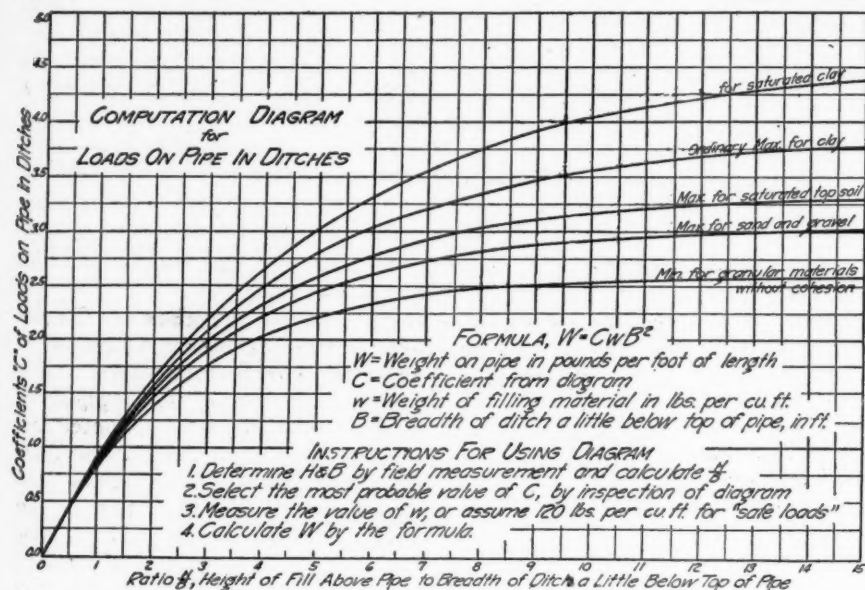


DIAGRAM GIVING VALUES FOR C IN FORMULA FOR LOADS ON PIPES IN TRENCHES.

TABLE NO. II.
Ordinary Maximum Loads on Pipes in Ditches from Common Ditch Filling Materials.
In Pounds per Linear Foot.

H = Height of fill above top of pipe.

B = Breadth of ditch a little below the top of the pipe.

	1 Ft.	2 Ft.	3 Ft.	4 Ft.	5 Ft.		1 Ft.	2 Ft.	3 Ft.	4 Ft.	5 Ft.
	Minimum Loads Without Cohesion; Filling Material at 100 pounds per cubic foot.						Ordinary Maximum for Sand Filling Material at 120 pounds per cubic foot.				
	These loads are those commonly imposed by granular filling materials before tamping or settling.						Use these values as safe loads for sand filling in all ordinary cases.				
2 feet....	140	332	528	728	925		176	410	646	885	1125
4 feet....	204	558	938	1328	1720		267	703	1165	1636	2109
6 feet....	234	712	1255	1824	2403		313	914	1581	2271	2973
8 feet....	248	816	1498	2232	2985		338	1066	1915	2811	3729
10 feet....	254	888	1688	2570	3485		350	1175	2183	3268	4392
12 feet....	257	936	1838	2848	3918		357	1254	2399	3656	4974
14 feet....	259	969	1949	3077	4285		360	1309	2571	3985	5484
16 feet....	260	992	2039	3266	4600		364	1351	2710	4268	5928
18 feet....	260	1007	2107	3418	4870		364	1380	2821	4502	6321
20 feet....	260	1017	2159	3550	5103		364	1401	2910	4700	6663
22 feet....	260	1024	2200	3655	5300		364	1416	2982	4870	6963
24 feet....	260	1029	2230	3743	5470		364	1427	3039	5020	7227
26 feet....	260	1032	2255	3817	5618		364	1434	3086	5138	7458
28 feet....	260	1035	2275	3878	5743		364	1440	3122	5240	7659
30 feet....	260	1036	2290	3928	5850		364	1443	3151	5330	7836
Very great	260	1040	2340	4160	6498		364	1454	3273	5820	9090
	Ordinary Maximum for Clay (Thoroughly Wet) Filling Material at 120 pounds per cubic foot.						Extreme Maximum for Clay (Completely Saturated) Filling Material at 130 pounds per cubic foot.				
	Use these values as safe loads for clay filling in all ordinary cases.						Use these values only for extremely unfavorable conditions.				
2 feet....	187	423	661	900	1140		210	467	726	986	1245
4 feet....	298	749	1215	1692	2166		346	841	1353	1868	2386
6 feet....	365	1000	1685	2382	3093		433	1142	1890	2658	3429
8 feet....	404	1193	2077	3000	3927		489	1383	2357	3367	4388
10 feet....	427	1343	2407	3530	4680		526	1577	2764	4000	5259
12 feet....	441	1458	2686	4000	5355		549	1733	3112	4568	6061
14 feet....	450	1547	2913	4413	5967		564	1857	3410	5080	6793
16 feet....	461	1615	3114	4775	6516		591	1957	3670	5535	7465
18 feet....	461	1668	3280	5089	7014		591	2037	3897	5940	8080
20 feet....	461	1708	3420	5374	7461		591	2102	4091	6310	8645
22 feet....	461	1740	3535	5620	7863		591	2153	4259	6636	9162
24 feet....	461	1764	3635	5836	8226		591	2195	4404	6930	9633
26 feet....	461	1783	3717	6022	8553		591	2228	4528	7191	10068
28 feet....	461	1798	3786	6192	8847		591	2254	4635	7429	10462
30 feet....	461	1808	3843	6335	9114		591	2276	4728	7640	10826
Very great	461	1845	4152	7387	11538		591	2363	5320	9450	14771

gives safe "ordinary supporting strengths" for all dimensions and other conditions of ditches commonly encountered for a safety factor of 1½.

SUPPORTING STRENGTHS DEVELOPED BY PIPES.

A knowledge of the definite supporting strength to carry loads, due to or transmitted through ditch-filling materials, which sewer pipe will develop in actual ditches with different pipe-laying methods, is essential to the rational design of pipe sewers as to supporting strength.

Extensive tests have been under way at Ames, Iowa, of the supporting strength of sewer pipe and drain tile in actual shallow ditches with different methods of pipe-laying.

Pipe-laying methods are readily separated into a few classes which may be designated "impermissible," "ordinary," "first-class," and "concrete-cradle." Only "ordinary," "first-class" and "concrete-cradle" methods require extensive attention in connection with the theory of supporting strength of sewer pipe in ditches.

The effect of differences in pipe-laying methods on the actual supporting strengths of sewer pipe in ditches is much less than was formerly supposed. Extensive laboratory tests have shown that even such extreme treatment as concentrating the entire load upon a single line over the center of the pipe (as with "three-point" bearings) decreases the cracking load only about 30 per cent of the "ordinary supporting strength."

The "ordinary" pipe-laying method is that in which the underside of the pipe is carefully bedded on soil for 60 to 90 degrees of the circumference (suitably rounding the bottom of the ditch for this purpose and digging hub holes for all pipes with hubs), and in which the pipe is surrounded by soil placed with ordinary care.

The ordinary pipe-laying method is used extensively in the construction of large tile drains and of pipe sewers in villages and small cities.

The "ordinary supporting strength" of sewer pipe is the supporting strength to carry loads due to or transmitted through ditch-filling which sewer pipe will develop in actual ditches with the "ordinary" pipe-laying method.

The "ordinary supporting strength" of sewer pipe is equal, with close approximation, to the cracking load in tests with standard "sand" bearings. This has been proven by extensive field tests at Ames, Iowa, and by ex-

tensive study of actual cases of cracked and of sound sewer pipe in actual pipe sewers.

The "ordinary supporting strength" of sewer pipe is a very important factor, on which all computations of supporting strength with different pipe-laying methods should be based, by the use of proper ratios, for the reason that in the great majority of cases of cracking of pipes in actual ditches the cracking occurs at loads just about equal to the "ordinary supporting strength" of the pipe. For the same reason, specifications of supporting strength and reports of all tests of supporting strength of sewer pipe ought to be expressed in terms of the "ordinary supporting strength."

The "first class" pipe laying method is that in which the underside of the pipe is very thoroughly bedded on soil for at least 90° of the circumference (suitably rounding the bottom of the ditch for this purpose and digging hub holes for pipe with hubs), and in which the entire pipe is surrounded with well compacted soil, all under the constant direction of a competent inspector constantly on the work.

The "first class" pipe-laying method is used exclusively in pipe sewer class construction in large cities, and generally on all important pipe sewer construction under first class engineers.

The largest sewer pipe and drain tile show not more than 1/50 inch movement outwards of the extremities of their horizontal diameters under cracking loads, which is not enough to develop sufficient side resistance to affect the cracking load materially, even when the ditch filling is thoroughly tamped, as with "first class" pipe-laying. Nevertheless, all spaces around the pipe should be completely refilled with ditch filling material, for even untamped refilling between the sides of the pipe and the sides of the ditch is of great value in preventing the collapse of pipe sewers after they crack. Many miles of cracked pipe sewers and large tile drains are still rendering good service for this reason.

The supporting strength to carry loads due to or transmitted through ditch-filling which sewer pipe develop in actual ditches with the "first class" pipe-laying method may be set safely at at least 20 per cent greater than the "ordinary supporting strength" of the same pipe.

It is possible to design and build concrete cradles of

TABLE NO. III

Standard Ordinary Supporting Strengths of Sewer Pipe Required for Ordinary Sand and for Thoroughly Wet Clay Ditch Filling Materials.

Strengths in Pounds per Linear Foot

- BREADTH OF DITCH A LITTLE BELOW TOP OF PIPE

		1 Ft.		2 Ft.		3 Ft.		4 Ft.		5 Ft.	
Height of Fill Above Top of Pipe	Ft.	PIPE LAYING METHOD									
		Ordinary	First Class	Ordinary	First Class	Ordinary	First Class	Ordinary	First Class	Ordinary	First Class
DITCH FILLING MATERIAL											
	Sand	Clay	Sand	Clay	Sand	Clay	Sand	Clay	Sand	Clay	Sand
2	265	280	220	235	615	635	510	530	970	990	805
4	400	450	335	375	1055	1125	880	935	1745	1825	1455
6	470	545	390	455	1370	1500	1140	1250	2370	2525	1975
8	505	605	420	505	1600	1790	1335	1490	2875	3115	2395
10	525	640	440	535	1765	2015	1470	1685	3275	3610	2730
12	535	660	445	550	1830	2185	1565	1825	3600	4030	3000
14	540	675	450	560	1965	2320	1655	1935	3855	4380	3215
16	545	685	455	565	2025	2425	1685	2020	4065	4675	3355
20	545	690	455	570	2070	2505	1725	2085	4230	4920	3525
22	545	690	455	575	2100	2565	1750	2135	4365	5130	3640
24	545	690	455	575	2125	2610	1770	2175	4470	5305	3725
26	545	690	455	575	2140	2645	1785	2205	4560	5455	3800
28	545	690	455	575	2150	2675	1795	2230	4630	5575	3855
30	545	690	455	575	2160	2695	1800	2245	4685	5680	3905
32	545	690	455	575	2165	2715	1805	2260	4725	5765	3940
Very Great	545	690	455	575	2180	2770	1820	2310	4910	6230	4090

Ordinary Pipe-Laying is pipe laying in accordance with customary good practice in tile drain construction, whereby the underside of the pipe is well bedded on soil for 60 to 90 degrees of the circumference.

First Class Pipe-Laying is pipe laying in accordance with the best customary practice in pipe sewer construction, whereby the entire underside of the pipe is very thoroughly bedded on soil and the entire pipe is surrounded by well-compacted soil, under the direction of an inspector constantly present on the work.

When pipe are laid in a Concrete or Other Permanent Masonry Cradle, strong enough to carry the entire load to the sub-base without breaking and large enough to prevent material settlement, the standard strengths for all dimensions of ditches and all filling materials shall be those specified in the standard specifications for clay and cement sewer pipe adopted, tentatively, in June, 1917, by the American Society for Testing Materials.

reasonable cost which will increase the cracking strengths of sewer pipe under loads due to or transmitted through ditch-filling 100 per cent or more above their "ordinary supporting strength."

Variations of the dimensions and other characteristics of concrete cradles (for the same diameter of pipe and other conditions) affect the increase in supporting strength greatly. The real effects of variations can be ascertained reliably only by actual tests to destruction.

A large amount of experimental investigation of concrete cradles of different designs, tested to destruction, is needed to determine the best designs, and the real values of concrete cradles of specific designs.

The best engineers seem pretty well agreed that the use of concrete cradles in pipe laying ought to be greatly extended beyond present practice in the construction of all pipe sewers of 15 inches diameter and larger.

A study of all known cases of cracking of sewer pipe or drain tile in actual ditches, and of the detailed data of a large number of cases of sound pipe in ditches, shows that a safety factor of $1\frac{1}{2}$ is both necessary and sufficient to prevent cracking.

(To be continued)

—Buy War Saving Stamps—

PHOTOGRAPHY AND BLUE PRINTING.

The Department of Public Works of Philadelphia finds that photography furnishes a better medium for showing the progress of public improvements and for obtaining publicity for the same than any other method that is known to be available. It therefore attempts to use this to its fullest capacity and has developed the service to such an extent that it has accumulated about 14,000 negatives showing various kinds of municipal improvements in all stages of progress. These negatives are kept in heavy envelopes for preservation.

Owing to the ever-increasing demand for the quick delivery of photographic prints and also of blueprints, a machine for drying photographic prints and blueprints was sometime ago recognized to be a necessity and the head of the department recommended installing a drying machine for this purpose.

Drawings are copied by means of a large photostadt, which was installed by the highway bureau for the purpose of copying plans of underground structures for use by public service corporations and others. There will be altogether about 2,500 of these plans to be copied and 317 of them had been finished at the time of the latest annual report. The size of this machine is such that it interfered with routine work in the room occupied by it and it was recommended that an additional room be obtained for it, fitted with suitable washing tanks and with appliances and conveniences for color photography, which was being contemplated.

In addition to the new appliances and the additional space required by the rapidly increasing work of the photographic division, an increased force also has become necessary, including at least two photographers, one experienced in commercial photography and the other in motion-picture work, and also a clerk to take care of and file the negatives.

While the making of municipal purchases by a department of supplies is undoubtedly to be recommended for almost every city, there are conditions connected with certain classes of purchases which should not be overlooked. One of these which has caused annoyance in connection with the work herein referred to has been the obtaining of blueprint paper. Neither the Department of Supplies nor the Department of Public Works can keep a large supply on hand on account of its rapid deterioration; while on the other hand, when the paper is

wanted it is wanted without the delay too often resulting from the method of procedure of a purchasing department. It should not be difficult to overcome such a difficulty. It might be suggested, for instance, that annual contracts for such paper be let by the Department of Supplies, the paper to be delivered directly and immediately by the manufacturers to the department needing it upon presentation of an order from such department.

—Buy War Saving Stamps—

IMHOFF ROYALTIES.

The following letter has been sent by the Pacific Flush Tank Company to "all engineers and municipalities," in conformity with instructions of the Federal Trade Commission. From this letter it will be learned that the commission authorizes that company to continue to collect royalties on the Imhoff patents, as it did prior to the war.

We beg to advise you that the Federal Trade Commission, under authority of, and in conformity with the "Trading with the Enemy Act" and with the executive order of Oct. 12, 1917, has under date of Dec. 17, 1917, exclusively licensed the Pacific Flush Tank Company to make or cause to be made, to use or cause to be used, to sell or cause to be sold, and to carry on or cause to be carried on within the United States, the inventions, processes and methods described in certain United States letters patent, employed in the disposal of sewage, under what is commercially known as the Imhoff Process and Tanks, for term of each of said patents.

We are required to report to the United States Government, through the Federal Trade Commission, a detailed list of every sedimentation tank, built or contemplated, which is of the two-story or Imhoff type, and in each instance, the total population tributary, the sewage of which the tank is designed to handle.

—Buy War Saving Stamps—

NECESSARY PUBLIC WORK SHOULD BE DONE.

The sewer problem is solely one of necessity. To build the sewers allowed in this year's budget will now cost perhaps twelve million dollars, instead of eight. The Council and the Board of Estimates are weighing the necessity of these improvements against the largely increased cost, and the undesirability of public work in war time. If the necessities of Detroit are greater than the objections, the public will no doubt approve this sewer construction. On the other hand, the public can reasonably request that this necessity be proved beyond ordinary doubt, and that the improvements be made in the strict order of their necessity, without regard to the real estate interests affected.—*Detroit Bureau of Governmental Research.*

—Buy War Saving Stamps—

PUBLIC WORK AT TOLEDO.

In sending us information concerning last year's paving work, which information was given in the February 16th issue, Harry C. McClure, commissioner of engineering and construction of Toledo, stated that that city contemplated about thirty large jobs of pavement construction, some hard street construction work involving considerable concrete, and approximately ten local sewers and an intercepting sewer, together with a pumping plant. This work will cost a total of about \$2,000,000 and will be constructed this year if it is found possible to obtain the necessary men and material.

—Buy War Saving Stamps—

KALISPELL BUYS LIBERTY BONDS.

The annual report for 1917 of W. H. Lawrence, superintendent of the Kalispell, Montana, Water Department, states that "By request of Mayor Pauline, the Water Department has invested from its depreciation reserve fund \$10,000 in Liberty Bonds and War Saving Certificates."

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Change of Address.

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributed Articles and Reports.

Contributions suitable for this paper, either in the form of special articles or as letters discussing municipal matters, are invited and paid for.

City officials and civic organizations are particularly requested to send to Municipal Journal regularly their annual and special reports.

Information Bureau.

Municipal Journal's Information Bureau, developed by twenty-one years' research and practical experience in its special field, is at the command of our subscribers at all times and without charge.

PIGGERIES FOR PROFIT AND PATRIOTISM.

If we may judge from the number of inquiries that have reached Municipal Journal during the past two months, there is no other one question that is so engaging the consideration of cities and towns at the present time as that of raising pigs on garbage. In view of the general interest in this subject, we are publishing this week three articles dealing with it, and expect to publish one and possibly more additional ones within the next week or two. Other articles and comments on the same subject will be found in the issues of Municipal Journal for August 9th and October 18th, 1917, and February 9th, 1918.

Garbage may also be utilized in reduction plants by which the grease is extracted and the remaining material is reduced to a form available as fertilizer. This fertilizer may be used by the farmer for growing grain, and that in turn be used for feeding hogs; but this method of utilizing would consume an additional year of time and a considerable part of the labor of the farmer, both of which would seem to be unnecessary; for the garbage, from which was prepared the fertilizer, which was used in growing the grain, which was employed in fattening the hogs, could have been used immediately and directly for this last purpose. A qualification of this statement is suggested by the query whether garbage is as desirable a food as is grain. Investigation of this problem appears to indicate that it is, provided the garbage can be fed to the hog while still fresh and comparatively free from foreign matters. In other words, if the citizens can be induced to keep out of the garbage pail materials which are not fit for hog-food, and if collections can be made with sufficient frequency and the garbage pails be kept

sufficiently clean to prevent the souring of the garbage, such utilization of the kitchen refuse of the community would appear to be the most effective and probably the most economical that can be made of it.

It appears to be the opinion that garbage used for this purpose should not contain too much meat, and therefore that collections from meat markets should be kept separate from the garbage. Also, fish-market refuse is considered undesirable. There is seldom any difficulty in disposing of the former, because of the considerable amounts of grease that can be derived from it by rendering plants, while the fish refuse also is in demand by similar plants or is valuable as a fertilizer if plowed under the soil.

A precaution which must be taken by every community, if it is to prevent the early condemnation of this use of garbage by the citizens, is the taking of all pains necessary to prevent the hog-farm from becoming a nuisance because of its odors. If no such precautions are taken, such a farm may become a greater nuisance than the most neglected sewage treatment plant; while on the other hand, it is perfectly practicable, by keeping such a farm free from uncovered refuse or filth, to prevent any greater odors than those connected with a well-kept stable or other abode of animals. Simply buying a herd of pigs, putting them in charge of an old-fashioned farmer, and dumping garbage into their pens as collected, is not to be thought of for a minute; but the hog farm should be prepared for the purpose as carefully as any other manufacturing plant, and the superintendent of the same should be as well trained for his business as though he were manufacturing ammunition instead of food.

Given a properly conducted farm and adequate separation and collection of garbage, and we believe that any community, large or small, can both economize in the cost of disposing of this kind of municipal waste and at the same time place itself in the class of those who are helping their country and the Allies win the war by increasing the amount of one of the most essential foods.

—Buy War Saving Stamps—

PEACE PREPAREDNESS.

No money, labor or material that can be used in aid of the country's war aims should be used for any other purpose not immediately essential to the well-being of the people. But this does not mean that no thought should be given to other matters. War was not expected by us and we were little to blame for being unprepared for it; but peace certainly is expected, and it is our duty to be prepared for it. Germany's is essentially a military government, but it is reported that for months it has been preparing for the peace that must come some time. It probably has worked out already a plan for making swords into plowshares, an estimate of the number of these that can be turned out, and the most effective plan for distributing and using these peace implements.

Cities should not build parks now, but they can plan them. It may be necessary to postpone paving the outlying residence streets, but a peace paving program should be perfected. One of the most common shortcomings of city governments has been their failure to take sufficient foresight—to prepare programs for the future development of public improvements, using therein the best talent available, and to decide upon the annual construction programs sufficiently in advance to permit careful preparation of detail plans for the same.

This year of comparative inactivity in municipal work can be made the most profitable in the life of the public works department if utilized wisely by them in planning for the future development of the city under peace conditions.

The WEEK'S NEWS

State Highway Events in Idaho, New York and Pennsylvania—New Jersey's Interstate Connections—Great Falls Raises Water Rates—Newark Helps Jersey City in Water Shortage—Philadelphia's Share of Gas Company Receipts—Ontario Controls Natural Gas—Fires in Montreal, Bowie, Tex., and Poughkeepsie, N. Y.—New York's "Millionaire Traffic Cop"—Cause of Port Newark Terminal Fire—Debt Limit of New York City—Gallipolis, O., Has City Manager.

ROADS AND PAVEMENTS

State Has to Buy State Highway Bonds.

Boise, Idaho.—The state land board has purchased \$400,000 worth of the state's highway bonds with the state's permanent school funds. The bonds bear $4\frac{1}{2}$ per cent interest. Bids on the bonds had been asked for ten weeks before, but none was received. After it was known that bond purchasing houses would not bid the highway commission asked the land board to buy the bonds. Bids were advertised six weeks later. The land board was the only bidder, and bought the bonds at par. The board advanced \$200,000 at once to the highway commission. Later this month it will advance another payment of \$100,000, and in March the fourth payment will be made. Before war was declared the highway commission disposed of \$500,000 worth of the state's road bonds to a Portland firm. A few months later it attempted to sell the second instalment of the \$1,000,000 worth of bonds voted by the last legislature, but no sale was found for them. Because the constitution limits the state's indebtedness the highway commission cannot sell the remaining \$100,000 worth of bonds voted by the legislature until other bonds in that sum now outstanding are retired. The state will be in a position to reduce its indebtedness in April.

New Jersey Interstate Bridge and Tunnel Legislation.

Trenton, N. J.—The three bills to advance the projects for a tunnel between Hudson county and New York City under the Hudson River and for a bridge over the Delaware River, between Camden and Philadelphia, have been passed by the state legislature and signed by governor Edge. They were administration bills. House 1, providing for the appointment of interstate commissions on bridge and tunnel, was put through after an amendment had been made by which all reference to civil service requirements for employees of the commission was stricken out. This was done because the state could exercise no jurisdiction over employees who might be chosen from other states. The action was on the suggestion of the civil service commission. The second bill prescribes the duties of the commissioners and their powers. When the third bill, the one to impose a state tax of \$1 on \$1,000 of ratables, was taken up assemblyman Simpson asked unanimous consent to amend on third reading under suspension of the rules. He explained the object of the amendment was to get to work at once on the tunnel. The amendment was defeated when it was pointed out that neither Pennsylvania nor New York had yet acted definitely.

Increased Cost of Highway Work in New York.

Albany, N. Y.—The war has had the effect of nearly doubling the cost of road making in the state of New York, according to a report of the state highway department to the senate finance committee and the assembly ways and means committee bearing on the annual highways appropriation bill. Common labor has jumped from \$1.75 a day in 1915 to \$3. Crushed stone from commercial plants has risen from 60 cents per ton to \$1. Asphalt binder climbed from 4 cents to 10 cents a gallon. Cement increased in price from \$1.25 to \$2.25 a barrel. The highway appropriation bill as it was originally submitted to the committee carried items for reconstructing approximately thirty miles of old pavement at an average cost of nearly \$15,000 a mile and resurfacing 143 of old macadam pavement at an average cost of \$9,430 a mile, making a total cost for the

175 miles of \$1,787,840. "In 1915," says the department's report, "the average cost of resurfacing 236 miles of old pavement was about \$5,200 per mile, while under present prices it is estimated that the work of this nature will cost \$9,430 per mile, or an increase of about 81 per cent." The department points out that the proposed mileage to be reconstructed and resurfaced represents only two and one-half per cent. of the entire system of improved state and county roads, which aggregate 6,700 miles. To do the road work would require the services of at least 1,500 men for a period of six months. This would cut in seriously on the farm labor supply in the thirty-seven counties in which the roads are located. "It must be remembered, however," says the report, "that although expediency at this time necessitates the putting off of this needed work there must be a day of reckoning when it will be obligatory for this work to be performed and will necessitate an increased appropriation when the war is over." Carrying an appropriation of \$1,500,000 less than was asked for, the bill providing for the maintenance of the state and county highways was introduced in the senate by senator Sage, and in the assembly by assemblyman Machold. The highway department asked for \$5,400,000, but the bill carries only \$3,787,383. "We need all the money and men we can get on other work at this time," said senator Sage, "and the highway department assures us the reduction will not impair the efficiency of the roads."

Contractor Wins Case on Estimate Errors.

Newburgh, N. Y.—The court of appeals has decided the case of Abner M. Harper, Inc., against the city of Newburgh in favor of the plaintiff. In 1912 Harper, who is a civil engineer and contractor, made a bid for the paving of a street, and deposited a check for \$500 as a guaranty. His bid was the lowest, but after sending it in he discovered a mistake in his calculations as submitted, the figures on bluestone curbing and concrete having been transposed in copying. The city refused to surrender the \$500 check to Harper, the council having voted him the contract, and the resolution so awarding it awaiting approval by the mayor when Harper gave notice of withdrawal. Harper brought suit for its recovery, claiming the court had power to right a mistake made honestly. On the first trial of the action justice Tompkins decided in favor of the city, but the appellate division reversed the judgment. On the second trial justice Tompkins decided against the city, and the appellate division affirmed the judgment. It was from this decision the city appealed, the decision being now affirmed. Corporation counsel Corwin represented the defendant-appellant. The costs accruing against the city are about \$1,000.

Protection of Pennsylvania Highways in Spring.

Harrisburg, Pa.—State highway commissioner J. Denny O'Neil has issued instructions to the fifteen division engineers and to the fifty county superintendents of state highways, requesting that special efforts be made at this time for the protection of state roads. Road conservation, the commissioner stated, is of the utmost importance at all times, but particularly is it necessary at this season of the year, during thaws, and when the frost is leaving the ground in the early spring. State highway employees in all of the engineering districts throughout the state have been instructed to request owners of wagons and motor trucks to take care in driving over the roads while they are soft, and to try to avoid driving continuously in

the middle of the road—in ruts. Owners of vehicles of all types are urged to make more frequent hauls rather than to carry excessively heavy loads. Such co-operation, the commissioner states, will mean much in keeping the highways in a travelable condition. The state highway department will take special steps to keep side drains and culverts open so that the water may be kept off the road surface. Vigorous efforts are being made to avoid slides on the mountain roads throughout the state, which, in the past, have been the cause of much expense. Snow removal has caused the extraordinary expense during the winter, costing the state highway department \$100,000 to keep the main roads open during the past eight weeks. The snow and the ice, however, have been somewhat of a protection to the road surface. The great damage will be done to the roads when the frost is going out of the ground or during a thaw.

SEWERAGE AND SANITATION

Fight Spinal Meningitis Near Camp.

Charlotte, N. C.—The city and Camp Greene were quarantined for three weeks in order to put down an epidemic of spinal meningitis which seriously threatened them. The quarantine was put on for only two weeks first, but was extended for a third. The camp and all institutions and public places in the city were banned. The situation is in charge of Colonel Eastman, surgeon in charge of medical work at Camp Greene; Major Benjamin W. Brown, United States public health officer in charge of the five-mile zone surrounding Camp Greene; Dr. Joseph K. Bolton, meningitis specialist of the United States public health service, and Dr. C. C. Hudson, city health officer. The physicians pointed out that the real menace is the meningitis carrier. Cultures from hundreds taken recently, it was explained, showed that 3 per cent are "carriers." From this the deduction was made that there are probably between 1,200 and 1,500 "carriers" in Charlotte. Mayor F. R. McNinch and the other city and camp authorities co-operated to make the quarantine very effective.

Court Reverses Commission on Sewerage Rate Increase.

Collingswood, N. J.—Asserting that rates charged by public utility corporations may be unjust and unreasonable if they are too low as well as if they are too high, the supreme court at Trenton has handed down a decision reversing the public utility commission in refusing to permit the Collingswood Sewerage Company to increase its rates, notwithstanding it had been represented that the company was operating at a loss and probably could not continue in business unless permitted to raise rates. The opinion in the Collingswood case, which controls several other decisions, is of far-reaching importance because it indicates that an erroneous construction has been placed upon a previous decision of the court, which was accepted as holding that franchises containing rate provisions constituted irrepealable contracts. It was on this theory that the public utility commission denied the relief sought by the Collingswood Sewerage Company, believing it was bound by the franchise granted by the municipality, fixing a maximum rate to be charged by the sewerage company. In setting aside this view the court said that a municipal franchise granted to a public utility is a conditional grant and not an irrepealable contract. It held that it is within the power of the legislature to delegate to one of its agencies—in the present case the public utility commission—the power to regulate rates, and in such cases this power supersedes the restrictions in the franchise. Two other cases are involved in this important opinion—those of the Northampton, Easton & Washington Traction Company and the Burlington Sewerage Company. In each case the public utility commission refused applications to increase rates because of existing contracts between the corporations and the municipalities in which they operate. In each case it was also proved before the utility commission that at existing rates the companies were unable to secure income sufficient for exten-

sions of service. Justice Swayze, who wrote the controlling opinion, says the utility commission should have ordered a modification of rates and should not have shifted the responsibility to the municipalities by suggesting that the corporations seek municipal action for a modification of franchises. The cases are remitted to the utility commission for new hearings.

WATER SUPPLY

City Raises Water Rates.

Great Falls, Mont.—The city council has decided to raise the water rates instead of levying the two mill tax provided by the state law, of which permissible two mills one mill has already been levied. The water committee of the council had reported that it considered a raise of rates more equitable than a raise of the extra mill by a general levy. The report said in part: "Our present rates as a rule are lower than in any other city in the state, although the cost of delivering is higher. We call attention to the fact that schools and hospitals now have a half rate, churches, the library, fire station and police station, also public markets free, and a flat rate to the Orphans' home, all of which is contrary to a ruling of the public service commission." The recommendations were that a discount of 10 per cent be allowed on all bills paid monthly in advance for flat rates and before the 5th of every month for meter rates. With this concession to those paying in advance or promptly as indicated, the recommendations are that the rate on all residences be raised 20 per cent per month; private baths and toilets, 10 per cent, and 10 per cent discount if paid 30 days or more in advance; irrigation raised from \$2.50 to \$3 per lot; and a discount of 10 per cent if paid on or before May 31. Hydrant rates were raised to \$6. The recommendations were approved and the report was referred to the public service commission at Helena for approval. It is almost a certainty that the committee's report will be approved by the public service commission, whose engineer was present at the council a few weeks ago and heard the discussions. He said the city was entitled to raise its rates on the showing made.

City Pays Half for Water Run to Prevent Freezing.

Elmira, N. Y.—Readjustments of rates are being made by the Elmira water board in the bills of those customers who allowed their water pipes to keep running through the cold periods of January, according to an announcement made by secretary John J. McNevin. The board has devised a sort of "fifty-fifty" plan and takes off about half the difference between the high bill and the average of other months. The water department has had great difficulty with frozen water services.

Newark Gives Water to Jersey City.

Newark, N. J.—Spurred by the seriousness of the water shortage in Jersey City, which threatened to force suspension of trains on the Hudson and Manhattan Railroad line for a few days, Newark went to that city's aid through an exchange agreement with the East Jersey Water Company. The company augmented Jersey City's supply at the rate of 8,000,000 gallons a day, and this city poured 5,000,000 gallons a day into the company's pipes. The situation was called to the attention of director Raymond of streets and public improvements and chief engineer Sherrerd by president Fisk of the Hudson & Manhattan Railroad Company, who said that immediate action was necessary. Newark hesitated about sending water into Jersey City because of the already heavy load on the Cedar Grove reservoir, due to the freezing weather. A scheme to bring an increased amount of water down the pipeline from the Macopin intake reservoir to Cedar Grove reservoir was put into effect by chief engineer Sherrerd. It consisted of raising the intake reservoir dam eighteen inches by the use of flashboards, thus increasing the pressure on the water at the reservoir bottom where it enters the pipeline. By this plan the water carried through the pipeline was increased by about 4,000,000 gallons daily, or to a total of

55,000,000 gallons. With the pipeline from the intake to Cedar Grove capable of carrying only 51,000,000 gallons, as was the case until a few days before, with the pipeline from Cedar Grove to the city capable of carrying 65,000,000 gallons, and with the city using daily, as it has been in these cold days, 56,000,000 or more gallons, the excess of the consumption over that brought from the watershed had to come from Cedar Grove reservoir.

Voters Disapprove Water Conduit Purchase.

Bayonne, N. J.—At the recent special election, the voters disapproved by a very small majority of the purchase by the city of the water-supply conduit property of the New York & New Jersey Water company. The city owns its distribution system, through which it supplies water purchased from the company. The vote stood 2,240 to 2,127. This is the third time this proposition was defeated.

STREET LIGHTING AND POWER

City's Share of Gas Company Receipts.

Philadelphia, Pa.—Upon receipt of the quarterly report of the United Gas Improvement Company for the final quarter of 1917, controller Walton announced that the total revenue received by the city in the year from the sale of gas was \$2,223,629.49. Controller Walton said this is the largest annual sum received for any year the gas lease has been in effect. During the quarter ended December 31, 1917, the U. G. I. manufactured and sold 3,138,250,260 cubic feet of gas. In this period the company collected \$2,904,993.07, of which the city's share was \$588,993.43. The municipal revenue during the three previous quarters was: First quarter, \$591,391.08; second quarter, \$541,412.88, and third quarter, \$501,832.10. The city's total in 1917 was \$179,268.72 more than the 1916 figure, which was \$2,044,360.77. Last year ended the five-year period during which, according to the terms of the lease, the city's share of the receipts was based on twenty cents of each \$1 per 1,000 cubic feet. From now on until the lease expires, ten years hence, the city's share will be twenty-five cents and the company's seventy-five cents.

Gas Rates Increased.

Madison, Wis.—The Wisconsin railroad commission has ordered an increase in the gas rates of the city of Ashland. The new rates become effective February 1 and will continue for six months, when the old rates will be restored. The new rates provide for a minimum monthly bill of fifty cents. For the first five thousand cubic feet of gas per month a gross rate of \$1.80 and net rate of \$1.65 per thousand, and all over five thousand feet a gross rate of \$1.70 and net rate of \$1.55. The difference between the gross and net rates will be a discount allowed for payment of bills before the tenth of each month.

Company May Not Raise Rates Arbitrarily.

Red Wing, Minn.—The Wisconsin-Minnesota Light & Power company may not raise its gas rates in the city without first getting the consent of the city council or submitting the matter to a board of arbitration as provided by the city charter. This is finally decided by an order from the supreme court issued upholding the decision of judge Albert Johnson in district court and sustaining the temporary injunction issued by that court. The gas company, which put a raise of 10 cents per 1,000 cubic feet into effect immediately after appealing from the lower court's decision, must make rebate to every consumer who has paid the increase, together with interest. The decision says: "The city has an interest in maintaining the arbitration provisions of the franchise in behalf of its inhabitants for whom it acted when granting the franchise; and since the right of the city and its inhabitants to relief rests upon common ground, this action will lie if there be a threatened breach of contract as to the gas consuming inhabitants, for thereby a multiplicity of suits is avoided." The main contention of the gas company, it appears, was that the arbitration clause of the charter ordinance applied only to rates for gas used by the municipality and not to that supplied private consumers. That is, that prices for street lighting might be arbitrated

but not the rates given to individual consumers. The supreme court decided the city, in granting the gas franchise, had in mind securing the same benefits and privileges for individuals as for the municipality. The ordinance, the opinion says, guards against an arbitrary fixing of rates by the gas company. It provides that rates must be fixed by an arbitration board of three when the company and council cannot agree as to rates. This section covers not only gas used for street lighting or municipal purposes, but that used by inhabitants as well, the ruling says. "Where, in a franchise, the interests of the public are involved," says the opinion, "doubts and ambiguities must be resolved in favor of that construction which is most advantageous to the public. The clause providing for a rate not exceeding those of other cities in the state appears, to us, to merely point to the standard which the city council, the arbitrators or the courts, as the case may be, should apply in determining what is a fair rate. In other words, the reasonable or market value of gas is to govern." The company claimed the clause calling for a rate equal to that of other cities in the state to be invalid. The order intimates that comparison of rates with other cities need not enter into the case. The controlling feature is whether the gas company may fix rates for private consumers without the consent of the city council and without arbitration. This the decision rules against.

Provincial Control of Natural Gas in Ontario.

Toronto, Ont.—The Ontario legislature broke all speed records at its first business session when it gave first, second and third readings and unanimously passed the natural gas act, giving the Ontario railway and municipal board wide powers to control and regulate the production and transmission, distribution and sale, disposition and consumption of all the natural gas produced in Ontario. This was an emergency measure, taken to relieve, within the next twenty-four hours, the serious situation which existed in various parts of the province, which depend on natural gas for heating purposes, but especially the city of Windsor and district, where thousands of women and children were reported to be actually freezing owing to the failure of the natural gas supply. The Ontario railway and municipal board is now in complete control of the situation, and has power to control all private corporations. Hon. G. Howard Ferguson stated that the situation in the city of Windsor was so serious that the people in one section of the city had been compelled to leave their homes and go to another part of the city or to Detroit. Heavy penalties were provided for companies or persons failing to carry out the orders of the railway board, the maximum being \$1,000, or six months' imprisonment.

FIRE AND POLICE

Fifty Children Die in Fire.

Montreal, Que.—More than fifty children perished in a night fire which partially destroyed a wing of the Grey Nuns' Home here. The home is a great building, occupying a whole block, and part of it is occupied by convalescent soldiers. Although many of them were stretcher cases, all adults were taken out of the building without loss of life. Several of the returned wounded men were seriously injured by falling debris before they could be reached by the large army of rescuers. A dozen or more had to be carried from the second and third stories on beds. There were about one thousand persons in the building—200 returned soldiers, many nursing sisters, nuns, crippled people, aged and children. The fire started on the top floor, near the tower, and immediately caught in the curtains of a nearby window, from which it spread rapidly throughout the wooden interior. All of the top floor was occupied by babes in cots, some of them only a few days old. These were the infants lost, all the older children, who were in another part of the building, being saved. When the firemen had, after valiant work, got the fire under control all the southern part of the top story had been destroyed and a great deal of damage done to the remaining part of the west wing. The returned

soldiers who were not confined to their beds lent their efforts to the rescue work. When the first fireman, sub-chief Marin, arrived the soldiers were already at work, at great risk to themselves, in handing children down the fire-escapes. Nearly the whole upper floor was then ablaze. The firemen rushed in and seized children right and left. A sudden gust of flame and smoke which burst from the tower made it impossible to reach children still lying in their cots in that part of the building, but only upon the definite orders of the fire chief were the soldiers debarred from attempting further rescues.

Millionaire Directs New York Traffic Police.

New York, N. Y.—Dr. John A. Harriss has been appointed special deputy police commissioner, without pay, to regulate traffic. Dr. Harriss, who retired from the practice of medicine to manage several business enterprises in which he is interested, took the position because he has for several years been making a study of traffic conditions in New York cities, and has various ideas for their improvement. Dr. Harriss is the president of the International Arms and Fuse Company, president of the International Mail Equipment Company, and president of the Metropolitan Hotels and Amusement Corporation. He belongs to many clubs, including the Automobile Club of America. On accepting the appointment from commissioner Enright Dr. Harriss said: "I am very glad to give my time to the city on this matter because I believe we have no problem which is more acute and pressing than that of traffic congestion on our streets, which causes loss of life, injury and marked inconvenience to our citizens. Unless it can be solved it will seriously hamper proper commercial development. It is my purpose to devote my time and energy to finding a solution of the problem."

Light Plant Destroyed by Fire.

Bowie, Tex.—The local power plant of the Texas Light and Power Company, which furnishes power and light for this city, was recently destroyed by fire. The firm had been constructing a new power house on the opposite side of the city from the old plant and had already received several pieces of machinery. The company installed a dynamo in the gin plant just across from the site of the fire, and is furnishing the city with light from this plant. The pumping station of the city waterworks, which is located adjoining the power plant, being housed in a brick building, was not damaged.

Port Newark Fire Due to Contractors' Negligence.

Newark, N. J.—Announcement has been made by the attorney general at Washington that the fire which recently caused at least \$400,000 damage at the wharf of the newly established army quartermaster's depot at the Port Newark Terminal was not due to incendiarism, but was caused by "gross carelessness" on the part of contractors engaged in the construction of the wharf. The alleged negligence is declared to have been so flagrant that the agents who made the investigation of the origin of the fire for the Department of Justice have recommended that the government institute civil proceedings to recover the cost of the damage. The investigation showed that the contractors had permitted a foreman, on the day before the fire, to build a dryer apparatus on the wharf near a fifty-gallon tank of gasoline. Not far away were several barrels of oil, and moored to the dock was a barge containing 600 barrels of crude oil. Two investigations were made, one by agents of the Department of Justice and the other by a military commission. The report of the latter commission, similar to that made by the Department of Justice agents, has been approved by the commanding general. The statement by the Department of Justice says in part:

"The result of this investigation calls attention again to the impossibility of safeguarding waterfront facilities by means of military guards, unless the owners co-operate by taking all proper precautions. Here, as in most other cases, damage came from internal causes. In this particular case the contractors, simply because a military guard was furnished for the outside of the premises, appear to have cast aside all sense of responsibility for the internal supervision of the premises.

"The disaster emphasizes the duty of private owners to provide proper protection in the way of expert watchmen, proper

lighting facilities, etc., on the premises themselves. It demonstrates anew the folly of manufacturers demanding mill guards and at the same time failing to meet the duty laid on them of taking extraordinary precautions within the plants to protect against damage. The investigation shows a gross neglect of even the most ordinary precaution and watchfulness.

"The report discloses that the contractors had permitted a foreman on Jan. 25, the day preceding the fire, to lay on this wharf, constructed of creosoted wood, a sand and cinder drying apparatus consisting of two twenty-foot sections of pipe two and a half feet in diameter, and to build in this dryer a fire to which were fed the tops of oak piling and heavy yellow pine timber. The Superintendent admitted that he had permitted the installation of this apparatus on the dock.

"Near the dryer was placed a fifty-gallon tank of gasoline, fuel for a concrete mixer. More distant, but not remote, were several barrels of oil that had been left on the dock by an oil company, owners of the property purchased by the Government for the depot, and moored to the dock was a barge containing 600 barrels of crude oil. The fire was drawn from the dryer at 5 o'clock on the afternoon of Jan. 25; the burning of the dock was discovered shortly after midnight of that day."

Two witnesses called, employed by sub-contractors engaged on the work, testified that the fire in the pipes was burning at 10.30 o'clock that night. The direction of the wind on the evening of the fire is set forth in the report to show that it blew from a quarter that would cause the coals to be enlivened.

Arson experts of the National Board of Fire Underwriters, supported by the fire prevention expert of Newark who visited the scene of fire while it was in progress, according to the report, expressed the opinion that the fire was caused by the intense heat of the pipes, having been conveyed to the cinders and coal that constituted the bed upon which the pipes lay. Testimony obtained by the department's agent showed that a hole two and one-half feet in diameter had been burned through the planking under the pipes.

\$300,000 Fire Destroys College Building.

Poughkeepsie, N. Y.—Fire starting in the servants' quarters on the fourth floor of the main building at Vassar College destroyed the floor and roof of the south wing, with a loss of \$300,000. Many valuable relics, bequeathed to the college by its founder, are included in the loss. No lives were lost and no injuries were reported. A call for troops was telephoned to the state armory in Poughkeepsie in the early stage of the fire, and about fifty men were sent to help the students. Most of the students returned to their rooms before midnight. The students' rooms were not damaged seriously. The building, which was built in 1861-1865, was the first building erected at Vassar. The main building is situated apart from the other college buildings. All possible safeguards against fire had been provided in the construction and equipment of the building. Special fire walls were so installed that the different wings, as well as the central hall, could each be separated from the others in case of necessity.

MOTOR VEHICLES

New Truck Does Well in Test.

Gloversville, N. Y.—The city's new \$7,200 fire truck performed very satisfactorily in the recent tests given in the presence of mayor Abram Baird, the council fire chief R. A. Maxon, fireman, and a large number of citizens. Carrying nine city officials it plowed its way up the steepest grades in the city through deep snow. It was taken to the Cayudetta Creek for the pumping tests. Here it threw 303 gallons per minute with a pressure of 105 pounds through 100 feet of hose. Ordinary hydrant pressure in the city is only between 50 and 70 pounds, 75 with high pressure. The new machine can throw a stream to the top of the highest building in the city, it is said.

New Triple Combination in Service.

Superior, Wis.—The triple combination chemical pumper and hose wagon recently bought by the city department brings the department up to the very latest in modern equipment. Fire chief Johnson is very much pleased. The contract price is \$10,250. Three manufacturers of fire-fighting equipment submitted tenders, all of which were about the same. The decision to purchase the American-La France engine came as a result of the satisfactory showing the other combination has given the city during the three years it has been in service. In a recent test, according to the chief, "the old engine performed as well as at the acceptance test, developing over 100 horsepower and registering 800 gallons of water a minute." The new engine is rated at 105 h. p. and guaranteed to possess a capacity of

750 gallons a minute. It will eliminate the work of five horses and two men. According to chief Johnson the new equipment will pay for itself in three years in the saving of departmental expenditures. The apparatus has a six-cylinder engine. It carries 1,200 feet of 2½-inch hose and a chemical tank.

GOVERNMENT AND FINANCE

New City Manager Appointed.

Gallipolis, O.—The city commission has appointed Edward E. Myers city manager at a salary of \$1,500 a year. According to local reports, manager Myers "was raised on a farm, came to Gallipolis as a mechanic at the hospital, was elected sheriff and served two terms, and later ran an automobile garage. He has been an active political worker."

Cost of Appealing Case from Commission.

Springfield, Ill.—The members of state public utility commission have been placed in contempt of court in a friendly suit before the circuit court of Sangamon County. This will be in force until the Illinois supreme court decides whether a litigant taking an appeal from the commission to the circuit court shall pay the state for the cost of preparing the record. The question has been before the courts for two years. The commissions were before judge E. S. Smith in response to a citation for contempt following their refusal to file the record in a case. The cost of preparing the record had not been paid. The commissioners were fined \$25 and costs, payment being suspended during the appeal to the supreme court. The commission bases its demand for payment on the Illinois Public Utility Law. In the appeal of the Springfield Gas & Electric Company from a commission order the company contested payment of the fee for preparing a record, amounting to several hundred dollars. The court required the company to deposit the amount of the fee in a bank, designated by the court, pending a decision upon the point. Since then contingent payment has been guaranteed in some cases.

New York City's Debt Limit.

New York, N. Y.—Controller Charles L. Craig has sent to Mayor Hylan a letter setting forth the city's debt limit at the time he took office and the estimated amount the city will have to spend during 1918 after the necessary requirements are taken care of. The estimate places the debt-incurring power which may be available for authorization for any municipal purpose which the board of estimate may determine at \$10,861,338.59. This amount may be increased \$9,849,271.56 more, the controller stated, by using for other purposes the amount set aside for the South Brooklyn marginal railroad and the balance of the reserve for dock, port, and terminal improvements. The debt-incurring power of the city, or its debt limit, on January 1, 1918, the controller stated, was \$50,270,155.96. Against this there are commitments, unincumbered balances of authorizations of corporate stock for public improvements, etc., amounting to \$31,851,077.05. According to the controller, these amounts "reflect the authorizations and reserves which have heretofore been made and are in the nature of contingent incumbrances on the city's debt-incurring power."

"It may be noted from the debt limit statement that the \$50,270,155.96 of debt-incurring power possessed by the city is reached after charging, in addition to the constitutional funded debt, a further net debt of \$61,514,872.06, consisting of liability for lands acquired by the city for various purposes; of contract liability for rapid transit and other purposes still to be earned, and the amount of open market orders on the books of the Department of Finance. From the viewpoint of financing, therefore, the city could borrow upward of \$61,000,000 by means of corporate stock or corporate stock notes to provide funds to pay these land liabilities and to meet these particular contract liabilities as they crystallize into amounts actually earned, without decreasing the \$50,270,155.96 debt limit or debt-incurring power of the city."

The estimated additional requirements for improvements, etc., which will require to be provided during the year, Controller Craig says, will increase the available debt limit to \$63,212,415.64. Commitments for rapid transit purposes, school-house sites, street and park openings, and the South Brooklyn Marginal Reserve will amount to \$52,351,077.05, leaving as remainder \$10,861,338.59.

The total funded debt of the city, made up of long-term corporate stock, corporate stock notes, serial bonds, assessment bonds, and general fund bonds, the Controller puts at \$1,214,948,477.26. Of this total, the sinking funds hold plus cash available for redemption, \$194,277,375.01, leaving the net amount of funded debt \$1,020,671,102.25.

Tax Assessment on Intangible Values of Utility.

Beverly, N. J.—Mayor Thomas E. Lee has won his fight to compel the Delaware River Water Company to pay taxes on increased assessments of its properties here. The case, which has been fought out on the appeal of the company before the Burlington county tax board, has aroused state-wide interest, as it establishes an important precedent that permits cities to assess utility companies nearer to their stock valuations. This is said to be the first time a New Jersey municipality has gone after the taxes from just this angle. In asking utility commission to permit an increase in its capitalization the company said recently that it had assets of \$432,000 on which it should be permitted to earn a dividend. During the tax board hearing city attorney Francis Smith subpoenaed a banker to further show that the company in 1910, to procure a \$150,000 mortgage loan, had filed an affidavit to the effect that its properties were worth \$358,000, with an undivided surplus of \$58,000. But the company paid taxes up to three years ago on an assessment of only \$25,000 in Beverly City, where its main plant is located, and on an additional assessment of \$25,000 in Beverly township and \$23,000 in Riverside township, which it also supplies with water. A score of municipalities, including Collingswood, where the same interests controlling the Delaware River Water Company here own a water plant, have been waiting a conclusion of the case here before commencing similar action. "The decision means that if a utility corporation asks the right to earn a dividend on its watered stocks it must pay taxes on the intangible values represented by those stocks," says mayor Lee. "The companies can't pay taxes on their inflated values and exist. It means a rapid squeezing out of the water or the forcing of the companies into public ownership."

STREET CLEANING AND REFUSE DISPOSAL

City Garbage Profits Cut by Conservation.

Columbus, O.—Wartime conservation and economy in Columbus has cut the profits of the municipal garbage reduction plant over \$30,000 during the last year, according to a statement made by Thomas D. Banks, superintendent of the plant. The profits for 1916 were approximately \$40,000, and for 1917 they were about \$8,000. In 1916 the city collected and turned over to the plant 1,344,789 pounds of garbage, and in 1917 there was collected 676,759 pounds. In addition to the decrease in garbage collected, superintendent Banks says there was a considerable decrease in fats in the garbage. Because of the increase in the price of grease, Banks expects the receipts of the plant to be increased in 1918. The contract for the tankage from the plant was awarded some time ago to the Farmers' Fertilizer company, of Columbus, at a price approximately double the price received for this product in 1917.

Merchants Aid Snow Removal.

New York, N. Y.—The Merchants' Association recently called on New York merchants to render aid to the street cleaning department in removing snow this winter by lending trucks to the city during snowfalls. The committee on City Conditions, of which John C. Eames is the chairman, after outlining the plan in a general way, said: "Under this plan, several hundred trucks or more, together with the necessary help for loading, can be at once employed in snow removal from business streets designated by the commissioner, whereas several days would necessarily elapse before all of the streets could be freed from snow if only the force of the department were employed." The committee urged that a personal canvass of merchants using trucks be made, to the purpose of organizing this auxiliary snow-fighting force early in the winter.

LEGAL NOTES

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Private Road—Permissive Use.

(Mich.) Mere permissive use of a private road, however long continued, will not make it a public highway.—*Weihe v. Macatawa Resort Co.*, 164 N. W. 510.

Road Routes—Selections.

(Ky.) Under Ky. St. §§ 4356w, 4356x, subd. 3 et seq., fiscal court may establish new routes, and is not restricted to roads theretofore laid out by order of county court.—*Campbell v. Hammons*, 197 S. W. 646.

Assessments—Paving Intersections.

(Or.) Where it is discretionary with a city council to include or exclude the cost of intersections when making paving assessments, it cannot be prevented from levying special assessments for an improvement, even though it has in the past paid for the same kind of improvement by general taxation.—*Colby v. City of Medford*, 167 P. 487.

Non-Property Owners—Damages for Street Closing.

(Ky.) Persons not owning property abutting or adjoining public street in city of fifth class cannot recover damages for closing street.—*Jameson v. Louisville & N. R. Co.*, 197 S. W. 386.

Damages for Street Vacation—Recovering.

(Ill.) If damages for vacation of a street for which municipality is liable under Hurd's Rev. St. 1915-16, c. 145, § 1, are not determined before vacation, property owner may recover them at any time within statute of limitations.—*Lockwood & Strickland Co. v. City of Chicago*, 117 N. E. 81.

Contractor's Bond—Council Decision.

(Va.) Whether bond should be required of municipal contractors rests in discretion of council, with which courts will not interfere, even on complaint of citizen.—*Town of Appalachia v. Mainous*, 93 S. E. 566.

Decision of Council—Completion of Pavement.

(Or.) The determination made by the council that the specifications and the contract of a paving contractor have been fulfilled and completed is conclusive.—*Lawrence v. City of Portland*, 167 P. 587.

Laying Out Addition—Starting Point of Survey.

(Ill.) Though particular stone should have been used as starting point by surveyors in making subdivisions, in view of fact that owners and surveyors, in laying out addition and subdivision, staked street on ground itself at particular point in accordance with another stone, the proper line of the street was as laid out.—*Wolpert v. City of Chicago*, 117 N. E. 447.

Obstruction of Stream—Liability of Municipality.

(Idaho) A municipality, as a riparian owner, may construct a breakwater to protect its property; but if it so obstructs a stream as to divert it and damage property of another riparian owner it is liable.—*Boise Development Co. v. Boise City*, 167 P. 1032.

Obstruction in Streets—Nature—Liability.

(Mass.) The right to put obstructions in street must be exercised with due regard to safety and convenience, and should not be of such a nature as would be likely to frighten horses.—*Hurley v. Boston & M. R. R.*, 117 N. E. 591.

Injury to Pedestrian—Liability of City.

(Iowa) City was liable for injuries to pedestrian at an alley crossing through accumulation of snow and ice, though recent rains had caused rough places on crossing to become more slippery and dangerous than before.—*Dewall v. City of Sioux City*, 164 N. W. 640.

Right to City to Vacate Street or Alley.

(Ill.) A city in the lawful exercise of its discretion may vacate a street or alley.—*Lockwood & Strickland Co. v. City of Chicago*, 117 N. E. 81.

Flooding Land—Damages.

(Ky.) Where a city drained its reservoirs annually into a creek running across plaintiff's land, and recovery was had therefor, that the city flooded the land the following year did not entitle plaintiffs to punitive damages in the absence of evidence of malice or oppression.—*City of Covington v. Faulhaber*, 197 S. W. 1065.

Paying Assessments in Installments.

(Or.) L. O. L. §§ 3245-3253, providing that owners of property may postpone payment of assessments by dividing them into installments, applies to every incorporated town and city; and although a city can legislate concurrently on the same subject it cannot compel an owner to accept its plan.—*Colby v. City of Medford*, 167 P. 487.

Liability of Town—Private Construction of Grand Stand.

(N. C.) If defendant town authorized construction of grand stand on its common by private party it would not be liable for injuries suffered by plaintiff due to its negligent construction.—*Morgan v. Town of Tarboro*, 93 S. E. 470.

Use of Roadway for Fifty Years—Prescription.

(Ill.) The use and enjoyment of a roadway by the public for more than fifty years create a presumption of a grant or a way by prescription.—*Law v. Neola Elevator Co.*, 117 N. E. 435.

Compensation of Firemen—Power of Local Authorities.

(Neb.) Rev. St. 1913, §4210, as amended by Laws 1915, c. 77, fixes the compensation of firemen in metropolitan cities, and the city authorities have no power to provide different compensation.—*Adams v. City of Omaha*, 164 N. W. 714.

Traffic Rules—Rights of Way.

(Minn.) Provision of Minneapolis traffic ordinance that vehicles on certain streets shall have right of way at street intersections over vehicles upon the intersecting streets is not abrogated by Motor Vehicle Law (Gen. St. 1913, §2637).—*Bruce v. Ryan*, 164 N. W. 982.

Local Assessments—Exemption—Damages.

(Wash.) A stipulation in a petition for a local improvement, waiving exemption from assessment by reason of damages, may be abrogated by the parties thereto by a subsequent agreement.—*In re Patterson*, 167 P. 924.

Power of Municipalities to Carry Out Orders.

(Idaho) Municipalities have implied authority to take whatever lawful means are necessary to carry out their express powers, and to protect their property.—*Boise Development Co. v. Boise City*, 167 P. 1032.

Election Notices—Requirements.

(Ky.) Under Ky. St. §3069, as to bond issues by municipalities requiring ordinance to be published for at least two weeks just preceding election in official paper, notice must be printed continuously in every issue of official paper during the period of two weeks prior to election.—*Hatfield v. City of Covington*, 197 S. W. 535.

Negligence of City—Liability.

(Wash.) It is negligence for city to place across sidewalk a one-inch water pipe one inch or more above surface of walk without protecting pipe at night by light or otherwise.—*Blackwell v. City of Seattle*, 167 P. 53.

Services to City by Mayor—Right to Compensation.

(Iowa) Where mayor of city performed services as laborer in violation of Code Supp. 1913, §879q, city council cannot, where he defended action to recover amount paid him, appropriate public moneys to reimburse him for his counsel fees and costs.—*Peet v. Leinbaugh*, 164 N. W. 127.

NEWS OF THE SOCIETIES

CALENDAR OF MEETINGS.

March 13.—VERMONT SOCIETY OF ENGINEERS. Annual meeting, Burlington. Secretary-treasurer, Geo. A. Reed, Montpelier, Vt.

May 13-17.—AMERICAN WATER WORKS ASSOCIATION. Annual convention, St. Louis, Mo. Secretary, J. M. Diven, 47 State street, Troy, N. Y.

March 17-24.—PAN-AMERICAN CONGRESS ON CHILD WELFARE, Montevideo, Uruguay. Secretary, Edward N. Clopper, 105 East 22d street, New York, N. Y.

April 15, 16.—SOUTHWESTERN ELECTRICAL AND GAS ASSOCIATION. Annual convention, Galveston, Tex. Secretary, H. S. Cooper, Dallas, Tex.

April 15-17.—UNITED STATES GOOD ROADS ASSOCIATION. Annual convention, Little Rock, Ark. Secretary, J. A. Rountree, 1021 Brown-Marx Bldg., Birmingham, Ala.

April 18-19.—BANKHEAD NATIONAL HIGHWAY ASSOCIATION. Annual meeting, Little Rock, Ark. Secretary, J. A. Rountree, 1021 Brown-Marx Bldg., Birmingham, Ala.

April 23-26.—SOUTHWESTERN WATER WORKS ASSOCIATION. Seventh annual convention, Tulsa, Okla. Secretary-treasurer, E. L. Fulkerson, Waco, Tex.

Southwestern Water Works Association.

The Southwestern Water Works Association, comprising membership in the states of Texas, Louisiana, Arkansas, New Mexico, Kansas, Missouri, and Oklahoma, will hold its seventh annual convention in Tulsa, Okla., April 23 to 26, inclusive. This association includes in its membership water works officials in all the states named.

The officers have made arrangements to have presented some of the best papers by experienced engineers and superintendents the association has ever had. Tulsa will extend a most cordial welcome, and has arranged a splendid program.

The president of the association is J. W. Bennett, Oklahoma City, Okla., and the secretary-treasurer is E. L. Fulkerson, Waco, Tex.

Illinois Society of Engineers.

The thirty-third annual meeting of the Illinois Society of Engineers held at Quincy, Jan. 24 and 25, brought out interesting discussion, particularly on the subjects of road and street improvement and drainage. Part of the time usually devoted to general meetings was assigned to the various sections. S. A. Greeley, of Chicago, gave an illustrated talk on sewerage at Camp Custer. The consideration of drainage problems included papers by A. L. Webster, of Wheaton, chairman of the drainage section of the society; new laws and decisions on drainage by E. J. Chamberlain, of Cairo; merits and defects of the levee act by attorney Miles S. Gilbert, of Pittsfield; the bridge question in drainage districts by G. F. Burch, of Cairo; drainage works near Quincy by A. H. Beitman, of Quincy, manager of the E. T. Perkins Construction Company, one on "Tile—More Tile," by J. A. Reeves, of Oak Park; and "Topographic Surveys

for Drainage Districts" by L. H. Williams, Quincy.

The second day's sessions were devoted to roads and pavements, and four papers were presented on these subjects in the morning. These were: "Features in Brick Pavement Construction," by G. N. Reiter of Chicago; "Bituminous Foundation of Pavements," by Lester Kirschbraun of Chicago; "Illinois Highways," by Clifford Older, state highway engineer, and "Handling Materials on Road Work," by William Ord of Cleveland.

In the afternoon there were addresses on wearing resistance of concrete with reference to consistency and curing conditions, by D. A. Abrams of the Lewis institute, Chicago; "Paving in Chicago," by H. J. Fixmer of the Chicago board of local improvements. Concrete curbing and finishing of concrete pavements were discussed by C. M. Powell.

A joint meeting at dinner was held with the Illinois Highway Improvement Association, at which the \$60,000,000 road bond issue for the state was discussed, among the speakers being W. G. Edens of the association and S. E. Bradt, superintendent of highways.

W. T. Barnes read a paper on inspection of sewerage systems and disposal plants. G. C. Habermeyer, acting director of the water survey division of the new state Department of Public Works and Buildings, described the work of the division.

Bloomington was chosen for the next meetings. T. C. Melliush, Bloomington, was elected president and T. W. Dappert, vice-president. W. P. Bushnell, Quincy, and S. A. Greeley, Chicago, were elected trustees. E. E. R. Tratman, Wheaton, is to continue as secretary.

Montana County Commissioners.

Commission government for counties was urged by former senator Joseph M. Dixon in the principal address of the first day before the state convention of Montana county commissioners, held recently in Missoula.

The commissioners devoted the second day of their meeting to discussion of road building, while auditors, assessors, treasurers, clerks, attorneys, surveyors and sheriffs were holding separate sessions.

Governor Stewart was the chief speaker at the second day of convention. Attorney general Ford and H. L. Hart, state treasurer, also spoke. The general sessions were devoted to the subject of taxation. The assessors reported a standard schedule of property valuation.

Several of the official groups elected officers. The results of these elections follow: Auditors—Mrs. Ethel Evenson, Missoula county, president; R. H. Michaels, Custer county, vice-

president; G. J. Bonnie, Hill county, secretary-treasurer. Attorneys—Fred R. Angevine, Missoula county, president; L. J. Onsted, Sheridan county, secretary-treasurer. County clerks—W. J. Babbington, Missoula county, president; B. P. Ross, Big Horn county, vice-president; F. E. Williams, Yellowstone county, secretary-treasurer.

The commissioners also heard addresses by mayor H. T. Wilkinson of Missoula, W. H. Bowman of Hardin, state bank examiner H. S. McGraw and president E. O. Sisson and dean A. L. Stone of the state university, Oscar Rohn, president of the state highway commission, assessor Martien of Lewis and Clark, Paul D. Pratt, the highway commission's engineer, and surveyors Ruffner of Dillon and Manwaring of Silver Bow. Herbert Nunn, state highway engineer of Oregon, gave an illustrated lecture.

Engineers' Club of Philadelphia.

On Feb. 29, the Engineers' Club of Philadelphia will be addressed by Prof. C. E. Lucke, civilian director, U. S. N. Gas Engine School, Columbia University, on "The Heavy Oil Engine."

On Feb. 6, Dr. R. S. MacElwee, Columbia University, read a paper on "Ports and Terminal Facilities."

Providence Engineering Society.

On Jan. 9 the power section of the Providence Engineering Society was addressed by Frederick B. Kenney, of the Blackstone Valley Gas and Electric Company on the subject "Central Station vs. Isolated Plant."

On Jan. 23 H. Anthony Dyer read a paper on the "Development of the Metropolitan Park System" before the municipal engineering section.

As a result of the canvass of the society made last month to determine whether to hold the annual banquet this year, the council has decided to omit this feature on the grounds of patriotism, food conservation and economy. This is in accordance with the sentiments expressed by the majority of the members replying.

Municipal Engineers of New York.

The next regular meeting of the Municipal Engineers of New York will be held at 8:15 p. m. in the Engineering Societies Building, 20 West 39th street, Manhattan, on Wednesday, February 27, 1918. A paper, entitled "Influence of City Zoning on Sewage Flow Assumptions Using Floor Area Basis," will be presented by Mr. Walter S. McGrane, assistant engineer, bureau of sewers, borough president's office, Manhattan.

This paper is to be presented in two parts, the first part being entitled "Fundamental Sewage Flow Assumptions in the Borough of Manhattan." Under this heading will be set forth the reasons why the old methods of estimating dry weather flow factors are not adaptable to the special conditions existing in Manhattan; the presentation of a new method, based

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INDUSTRIAL NEWS

Cast Iron Pipe.—Government prices remain constant, but there is a tendency to cut about \$2 a ton on 6-inch and \$1.50 on 4-inch where business is competitive. Quotations: Chicago, 4-inch, class B and heavier, \$57.30; 6-inch, \$54.30. New York, 4-inch, class B and heavier, \$58.35; 6-inch, \$55.35; 3-inch, \$65.35. Birmingham, 4-inch, class B and heavier, \$52; 6-inch, \$49; class A \$1 extra.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has a number of type "S" centrifugal pumping units available for shipment within fifteen to thirty days from the West Allis works. These are double suction, bronze fitted, split casing centrifugal pumps direct connected to Allis-Chalmers squirrel cage motors with potential starters. The three-phase 60-cycle units range from 2 to 125 h. p., and from 2-inch to 12-inch, voltages are 220 and 440—three of the units are 2,200 volts. There are twenty three-phase 25-cycle units, one each in sizes ranging from 2-inch to 6-inch and 2 to 40 h. p., all 440 volts. These units should prove attractive to engineers and municipalities desiring standard pumping equipment under rush conditions not easy to meet in these days.

Motor Truck's Record Trip of 391 Miles.—A four-wheel drive Duplex truck, made by the **Duplex Truck Co.,** Lansing, Mich., made a trip from the company's factory in Lansing to Pittsburgh in 60 hours actual running time. So successful was the trip from every standpoint that regular trips are to be made from the Michigan capital to the eastern city.

In order that accurate information might be obtained and the practicability of the Duplex for overland haulage work determined, the driver of the truck made a careful record of the trip. The total mileage was 391 and the total number of gallons of gasoline used was 59, or six and three-fifths miles per gallon. Five quarts of oil and one pint of water were required for the trip. The truck left Lansing at 3 o'clock on a Monday afternoon and arrived in Pittsburgh the following Friday morning at 2 o'clock. The total cost of operation, including driver's wages and expenses, cost of gasoline and oil, and including depreciation, tires, insurance and maintenance, was \$56.11. The railroad freight rate between Lansing and Pittsburgh on 7,000 pounds, the truck's capacity, is \$41.30, or \$14.81 less than the cost of transporting three and one-half tons of merchandise by Duplex truck. However, the Duplex hauled its load of merchandise direct from the manufacturer's factory in Lansing to the business house of the purchaser in Pittsburgh, thus saving a cartage charge at both ends that would total several dollars.

"The 391-mile trip was made without accidents or mechanical trouble of

any kind," said President H. M. Lee of the Duplex Truck Company. "The only delay occurred when the Duplex was held up four and one-half hours by other trucks that were stuck in the mud between Cleveland and Pittsburgh. The trip was truly a remarkable performance when it is considered that the truck left Lansing in a regular Michigan blizzard and hauled its load through eastern Ohio roads hub deep in mud. The freight was delivered in Pittsburgh three and one-half days after it left Lansing—several days in advance of the freight traffic schedule of railroads."

The American-La France Fire Engine Co., Inc., Elmira, N. Y., has received the following orders:

Charleston, W. Va.—1 type 75 pumping engine, 1 type 12 pumping engine, 2 type 10 combination, 1 type 40 combination with Junior pump, 1 type 31 75 ft. aerial truck; Deming, New Mexico—1 type 40 combination with Junior pump; Hannibal, Mo.—1 type 75 combination with Junior pump; Jamestown, N. Y.—1 type 14 service truck; Los Angeles, Cal.—1 type 75 pumping engine, 1 type 31 tractor, 1 type 17 tractor, 1 type 75 combination; Nanticoke, Pa.—1 type 12 pumping engine; Newark, N. J.—2 type 40 combination chemical engine and hose car; Osceola Mills, Pa.—1 type 40 pumping engine; Red Bank, N. J.—1 type 75 pumping engine; Superior, Wis.—1 type 75 pumping engine; Swarthmore, Pa.—1 type 14 service truck; Washington, D. C.—1 type 75 pumping engine, 4 type 20 combination with booster pump, 1 type 31 85 ft. aerial truck; New Brighton, Pa.—1 Brockway type B combination; Red Bank, N. J.—1 type A Brockway combination; Ticonderoga, N. Y.—1 type B Brockway combination; American International Shipbuilding Corp.—2 type Brockway service truck; American International Shipbuilding Corp.—2 type 12 combination; Piscataway Arsenal, Dover, N. J.—1 type 75 pumping engine; Submarine Boat Corp., Newark, N. J.—1 type 20 combination.

Laboratory Work of Portland Cement Association.

On February 8 state highway engineers and testing engineers from various states accepted an invitation of the Portland Cement Association to visit the Structural Materials Research Laboratory, Lewis Institute, Chicago. This laboratory, which is operated jointly by the Portland Cement Association and Lewis Institute, has become well known for the research work that is being carried on there under the direction of Professor D. A. Abrams in various lines associated with cement and concrete.

Visiting engineers listened to a lecture by Professor Abrams, outlining laboratory work, and also to a talk by Dr. O. E. Harder, laboratory chemist, who related the experiments that have been made and the results obtained with the colorimetric test for organic impurities in sand, which

was developed by Professor Harder in the institute laboratory.

In the evening the guests were entertained at dinner, following which there were round-table discussions, which brought out many impressions received during the day.

Among the states represented by highway officials and others were Arkansas, Connecticut, Illinois, Iowa, Indiana, Maine, Minnesota, Missouri, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, North Dakota, West Virginia and Wisconsin. Canada was represented by W. A. McLean, deputy minister of highways; C. R. Wheelock, president of the Ontario Good Roads Association, and H. A. Brazier, civil engineer. The state highway engineers of Illinois, Missouri, Ohio and South Dakota were present in person.

PERSONALS

E. J. Fort, chief engineer, bureau of sewers; H. H. Schmidt, chief engineer, bureau of highways, and George W. Tillson, consulting engineer to the borough president of Brooklyn, New York City, have been retained in the city's service, the order abolishing their positions, mentioned in this column last week, having been rescinded.

Hardenbergh, W. A., assistant editor of Municipal Journal, has been appointed assistant sanitary engineer in the United States Public Health Service. He is reporting at Macon, Ga., to assume his duties in connection with the malaria control work of the service.

Luther James N., formerly county commissioner, has been appointed superintendent of waterworks, South Bend, Ind.

Ruger, Charles E., city manager of Manistee, Mich., has resigned.

Whitten, Robert H., has opened an office for consulting work on city planning at 277 Broadway, New York. Mr. Whitten has had some five years' experience in city planning and zoning work in New York City. He served as expert for the Heights of Buildings Commission which made its report in December, 1913. As secretary of the Commission on Building Districts and Restrictions, he had a very important part in the development of the New York building zone plan. As secretary of the Committee on the City Plan of the Board of Estimate and Apportionment from its establishment in 1914 until its recent abolition by the Hylan administration he has had supervision of petitions for changes in the building zone plan; has initiated a number of improvements in city planning legislation and had started work on a comprehensive study of street congestion and main traffic routes. He has recently made a report for the United States Shipping Board on the housing and transportation conditions for shipyard workers in the yards adjacent to Newark Bay. Previous to his employment in zoning and city plan-

ning work Mr. Whitten was with the New York Public Service Commission, First District. He is the author of an authoritative treatise on the valuation of public service corporations and also a monograph on the regulation of public utilities in Great Britain. Mr. Whitten is a member of the American City Planning Institute.

The following officials have been elected in Norristown, Pa.: President, town council, Norwood D. Matthias; clerk, Harry Maxwell, jr.; engineer, S. Cameron Corson; solicitor, Henry M. Brownback; committee chairmen—highways, Daniel Sinclair, jr.; water and lamp, Elmer E. Beidemen; sewer, S. Milton Rambo; fire and water and finance, George W. Pifer; park, H. Severn Regar; sanitary, Dr. Wm. G. Miller.

The following are new mayors:

Pittsfield, Mass.—W. C. Moulton.

Gloucester, Mass.—John A. Stoddard.

Taunton, Mass.—William Flood.

Holyoke, Mass.—John D. Ryan.

Northampton, Mass.—Alvertus J. Morse.

Portland, Me.—Charles B. Clarke.

Cheyenne, Wyo.—Edward W. Stone.

Ocala, Fla.—J. E. Chace.

Sarasota, Fla.—G. W. Franklin.

Scranton, Pa.—City engineer, William Schunk; dept. of police, Lona B. Day; supt., bureau of fire, Peter J. Rosar; supt., police and fire alarm, William J. Neave; chief engineer, mine cave commission, Arthur W. Long; bureau of ashes and garbage collection, Jacob Mantz; supt. of parks, Thomas Phillips; city bacteriologist, Dr. Irwin W. Severson; supt., highways and sewers, Richard V. James.

Indianapolis, Ind.—Mayor, Charles W. Jewett; board of public works, Schuyler A. Haas, president, George Lemaux and Thomas H. Riley; board of public safety, Alexander L. Taggart, chairman, Felix M. McWhirter and Jacob H. Hilke; city purchasing agent, Dwight S. Ritter; chief of police, George V. Coffin; fire chief, John C. Loucks; city engineer, Henry W. Klausmann; supt. street cleaning, Charles R. Gift; street commissioner, A. O. Maloy.

Olean, N. Y.—Mayor, Foster Studholme; city clerk, Raymond G. Porsch; supt. streets, E. E. Allen; fire chief, L. G. Rodgers; water commissioner, James M. Homer; commissioner of public works, George H. Luther.

Yonkers, N. Y.—Mayor, William J. Wallin; city engineer, Lawrence Griffith; commissioner of public works, Thos. See; commissioner of public safety, Walter B. J. Mitchell; health officer, Dr. C. W. Buckmaster; water bureau supt., William Colquhoun.

Bethlehem, Pa.—Mayor and supt. public affairs, Archibald Johnston; supt. accounts and license, Alexander C. Graham; supt., public safety, Thomas F. Rowan; supt., streets and public improvements, A. W. Schlich; supt., parks and public property, James E. Mathews; city engineer, Robert L. Fox; city

clerk, Stephen H. Hughes; supt. of police, Curtis A. Davies; fire chief, A. E. Anderson; health officers, E. E. Houser and T. P. Nicholson; water supt., Chas. E. Bender; city planning commission, C. M. Schwab, W. A. Wilbur, E. G. Grace, H. J. Meyers and Charles Kurtz.

NEWS OF THE SOCIETIES

(Continued from page 176)

on a unit floor area system in predicting the future sewage flow for this borough, its relation to different types of districts and the verification of the accuracy of this method through actual sewage gaugings.

The supplemental paper, entitled "Method of Gauging Sewage Flow in the Borough of Manhattan," comprises a description of the development of the methods of gauging employed, the special difficulties encountered and the attempts to obtain automatic gauge records of the sewage flow. The paper will be illustrated by lantern slides.

Montana Institute of Municipal Engineers.

The three-day annual meeting of the Montana Institute of Municipal Engineers, held recently at Bozeman, was

in the form of reports of committees. The subjects considered were: Street cleaning and garbage disposal; sewers and sewage disposal; standardized specifications; highways and pavements; and water systems and purification plants. Captain Gerharze spoke on the part of the engineer in war. The following officers were elected: J. D. McLeod, Helena, president; A. B. Birkland, Lewistown, vice-president; R. E. Malsor, Bozeman, secretary-treasurer; F. O. Snow, Bozeman, and M. L. Morris, Great Falls, directors.

Civil Engineers' Society of St. Paul.

At the recent annual meeting members of the Civil Engineers' Society of St. Paul declared themselves in favor of a state law licensing civil engineers to practice their profession in the state. Reports of the several committees showed that the society had taken an active part in civic affairs, especially in the revision of the St. Paul building code. The following officers were elected: Prof. A. F. Meyer of the University of Minnesota, president; E. S. Spencer, vice-president; Paul C. Gauger, secretary; E. O. Korsmo, treasurer; C. H. Stewart; George H. Herrold, representative to the Minnesota Joint Engineering Board.

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Kingfisher, Okla., is to build WATERWORKS. Preliminary plans for the plant are in course of preparation by the engineering firm of Black & Veatch.

Topeka, Kan., is to improve its WATER SYSTEM by drilling wells and constructing a tunnel. Plans are in course of preparation by W. Kiersted.

Shelby county, Harlem, Ia., is to carry out a RIVER STRAIGHTENING PROJECT. The consulting engineer for the work is J. Harley Mayne.

A STREET LIGHTING SYSTEM is being built by Conrad, Mont. C. P. Wells, consulting engineer, is in charge of the work for the city.

Kandiyohi county, Willmar, Minn., is constructing a DRAINAGE SYSTEM. Plans and specifications for the improvement were prepared by the Kibbey Engineering Service Co.

Oxnard, Cal., is building a WATER SUPPLY SYSTEM, including pumping and distribution. Plans and specifications for the work were prepared by Olmsted & Gillelen.

Alameda county, Oakland, Cal., is to build, jointly with the Southern Pacific R. R., a double bascule BRIDGE over inner Oakland Harbor at a cost of \$1,750,000. The consulting engineers for the structure are Harrington, Howard & Ash.

BRIDGE repairs are to be made by Jackson, Minn., according to plans being prepared by J. H. A. Brahtz.

Improvements to its WATERWORKS are to be made by Norwich, Ont. Plans and specifications for this work were prepared by F. J. Ure.

A WATER SYSTEM is to be built by Wewoka, Okla. Plans for the improvement are being prepared by the Benham Engineering Co.

Clarinda, Ia., is to improve its WATER SYSTEM. Plans and specifications for the work are in process of preparation by the firm of Burns & McDonnell.

A SEWERAGE SYSTEM is to be built by Auburn, Me. The plans and specifications for the improvement are being prepared by the engineer, H. K. Barrow.

The city of Glens Falls, N. Y., has submitted to the state department of health a complete survey of the SEWERAGE SYSTEM, together with proposed extensions and improvements needed for relief. The engineering work was done by Henry W. Taylor.

A SEWERAGE SYSTEM, DISPOSAL PLANT and INTERCEPTING SEWER are to be built by Erie, Pa., at a cost of \$800,000. Plans and specifications for the work are in process of preparation by the engineering firm of Gannett, Seelye & Fleming.